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USSR Report

ENERGY

No. 31

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ELECTRIC POWER

ARMENIAN ENERGY PLAN REVIEWED

Yerevan PROMYSHLENNOST' ARMENII in Russian No 4, Apr 80 pp 8-10

[Article by G.T. Adonts, corresponding member of the Academy of Sciences, Armenian SSR: "The Lenin Plan for Electrification in Action"]

[Text] The GOERLO [State Commission for Electrification of Russia] plan developed at the behest of V.I. Lenin was called the second program of the party by him. The remarkable slogan "Communism is Soviet Power plus electrification of the entire country" belongs to Vladimir Il'ich Lenin. The following principles of electrification were made the basis for the GOERLO plan:

--re-equipping the national economy on the basis of using electric energy;

--insuring a growth rate for electric power engineering so that it may outstrip the growth rates of industrial production and creation of reserve power capabilities;

--construction of powerful regional thermal electric power stations and heat and electric power stations using local fuel resources;

--comprehensive use of water resources for irrigation, power engineering, transport and water supply needs;

--creation of powerful power system associations by construction of inter- and intra-system power transmission lines. Establishment of the country's United Power System;

--creation of new industrial centers for construction of electric power stations utilization of power resources.

Thus the principles of the GOERLO plan remain in force even today, in spite of the fact that certain of this plan's indicators have been overfulfilled a hundred-fold.

Power engineering in the Armenian SSR has been developing and continues to develop as an inseparable part of the country's power engineering. In 1935 electric power production in our republic was 2.9 billion kW-hr compared to 507 billion kW-hr for the USSR as a whole, and in 1975 it was 9.2 billion kW-hur compared for 1,031 billion kW-hr for the whole country.

Five stages may be noted in development of power engineering in Soviet Armenia.

The first stage began with the victory of Soviet power in Armenia. It is characterized by construction of a number of small electric power stations: The Yerevanskaya, Leninakanskaya, Alaverdskaya, Kafanskaya and other GES came on line. Wide-spread utilization of energy from water was achieved by building the hydroelectric power stations of the Sevano-Razdanskiy Cascade: Sevanskaya (rated at 34 megawatts), Atarbekyanskaya (rated at 80 megawatts), Gyumushkaya (rated at 224 megawatts), Arzninskaya (rated at 71 megawatts), Kanakerskaya (rated at 114 megawatts) and Yerevanskaya (rated at 42 megawatts)--a total capacity of 565 megawatts.

In recent years the cascade of these GES began to operate on an irrigation schedule, i.e. the waters from Lake Sevan have been used in recent years for irrigation needs. Electric power is produced at these GES as a result of waters being released from Lake Sevan for irrigation.

The construction of structures which are being completed for transferring water from the river Arpa into Lake Sevan and the adopted resolution on the additional feeding of Lake Sevan with water from the river Vorotan are a manifestation of the great concern of the Communist Party and the Soviet government to preserve the lake as a unique natural water storage facility. The Vorotanskiy cascade of GES, the Tatevskaya (rated at 157 megawatts), Shambskaya (rated at 171 megawatts) and the Spandaryanskaya which is under construction (rated at 76 megawatts), are called upon to perform the role of regulating stations, i.e. providing electric power for the energy system during evening peaks.

The development of hydroelectric power is characteristic of the second stage. As a result, the Armenian Power System, uniting all of the electric power stations in the republic in parallel operation, was created.

The third stage is characterized by entry of the Armenian Power System into the Transcaucasian United Power System. This was possible due to construction of the Atarbekyan-Akstafa electric transmission line originally at 220 kV, and then with this line being converted to 330kV. For a number of years (1960-1969) the Armenian Power System received electricity from the Transcaucasian Association of power systems over these lines to meet the republic's needs for electridication of an economy which was growing rapidly. In particular, in 1962, 690 million kW-hr of electricity were transmitted and the greatest transmission was in 1965 (1,648 million kW-hr).

The construction and operation of a number of thermal electric power stations and heat and electric power stations must be considered the fourth stage in the development of power engineering in the Armenian SSR. A number of powerful thermal electric power stations were erected: the Yerevanskaya TETs [Heat and Electric Power Station] (rated at 550 megawatts), the Razdanskaya thermal electric power station (rated at 1,100 megawatts), the Razdanskaya TETs and the Kirovakanskaya thermal electric power station (rated at 99 megawatts). The power system became primarily thermal.

The fifth stage is the construction and start-up of the first Armenian nuclear power station, as yet the only one in the Transcaucasus, rated at 815 megawatts.

As a result, the Armenian power system became a hydro-, thermal and nuclear power system which is a part of the association of Transcaucasia power systems via the 330 kV Atarbekyan-Akstafa electric transmission line.

Creation of a powerful energy base for the Armenian SSR permitted the following:

--that all sectors of the republic's developing economy, including all agriculture, be supplied with electric power;

--that, starting in 1972, excess generated electric power be exported to the association of Transcaucasian power systems;

--that power engineering be advanced for the further development of industry, agriculture and transport based on electrification.

Noting the successes and achievements in electrification of the republic, it is necessary to concentrate one's attention on the problems to be solved in power engineering for Soviet Armenia.

Presently the most important problem for the power systems of the republic and the country is conservation of fuel and energy. This is a problem of optimization, and digital computers and power engineering ASU [automated control systems] are being used first of all for its solution. The establishment of a computer center for power engineering at Armglavenergo [Armenian Main Administration of Power Engineering] which is equipped with the ES-1022 digital computer has as its goal to insure implementation of a number of programs into power engineering.

Let us point out as an example the programs for computing steady-state behaviour, electromechanical transfer processes, state stability, optimum distribution of active load powers among the system's operating electric power stations, taking power losses in the system's electrical networks into consideration, the location of compensating reactive power loads throughout the nodes and the selection of grounding circuits for the system's transformer neutral lines.

Introducing a monthly optimum operating mode for the power system insures, first of all, that distribution of active power among the thermal electric stations at which minimum fuel consumption is achieved, and, secondly, that value of voltage moduli of all of the system's generator nodes and moduli of the transformers' transformation ratios at which a minimum of active power losses is achieved in the electric networks. The problem is solved with given limitations (a minimum and a maximum) imposed on the parameters for the system's conditions. The program for solving this problem has been worked out at the Yerevan Polytechnical Institute and is presently being incorporated into the Armenian power system.

Conventional fuel consumption of 327 g/kW-hr of electricity produced has been adopted for the country's power system in 1980. Fulfilling this task requires many measures at each generating station in the system. The program for optimization of conditions in the power system should be incorporated in all of the country's power systems.

The next problem is urgent for all power systems--regulation of the conditions by supplemental hook-up of loads during the system's night-time operating hours and production of supplemental generated power during the evening peak hours. This problem may be resolved in the most economical fashion for the Armenian power system by the construction of a hydroelectric accumulating station (GAES).

Equipment for such a high-head station can be developed at the Leningrad "Elektrosila" association. As calculations show, operation of a GAES will provide significant fuel savings and more lengthy operation of the units at thermal electric stations. The lack of a GAES results in frequent stoppages and repeated unit start-ups, increasing fuel consumption and limiting the period of trouble-free operation.

No less important a task for power engineering is the wider electrification of agriculture by employing electric drive in agricultural production. Presently about 7 percent of the electric power generated in the country is used in agricultural production. Electrification and automation of this sector is one of the effective levers for improving labor productivity in the village.

In this regard the following will be necessary in the very near future: regulation of power supply networks to agricultural consumers; liquidation of the intolerable asymmetry of voltages and currents; use of transformers which are automatically regulated off load. The lack of these measures sharply diminishes the effectiveness of electrification of agriculture and in turn leads to a decline in the efficiency of agricultural production.

The problem of district heating for the republic's cities based on TETs and regional boiler plants to replace the individual boiler rooms of single enterprises and apartment buildings is no less serious for the Armenian SSR. This district hearing plan for the republic's cities has been worked out on assignment from Gosstroy [State Committee for Construction Affairs] ArmSSR. It remains to put it into operation as soon as possible.

The problem of adjusting the equipment in the system's automatic equipment with the aim of improving the stability of the system's operating conditions, both in steady-state behaviour and its transient processes becomes important in regard to putting the second power unit of the Armenian nuclear power station into operation.

Looking at power engineering as a large system, one must also be concerned about its fuel supply scheme. Questions concerning fuel transportation from fuel supply points to the thermal electric power stations require the constant attention of the appropriate planning, transport and gas-supply organizations. One cannot acknowledge the situation of fuel supply for the republic's power engineering needs to be satisfactory. The creation of reserve fuel-supply opportunities is in this case advisable.

It is expedient to hold back the growth of energy-intensive sectors of industry in connection with the need to satisfy long-range plans for electrification of the republic.

According to studies of long-range plans for the development of power engineering for the next 50 years, electrification will develop based on consumption of organic and nuclear fuels at the power stations. Let us point out as an example that the capacity of nuclear power plants being started up as part of the plans for power facility commissioning in 1980 will constitute on the order of 30 percent of the total commissioned capabilities.

The tendency toward wider use of nuclear power stations is observed in all of the world's advanced industrial nations.

Production of electric power at nuclear power stations will grow at a rate far exceeding that of electric power production at thermal power stations.

It is necessary to begin the design phase for an inter-system 500 kV electric power transmission line between the Armenian and Georgian power systems in order to make broader use of the advantages of the association of Transcaucasus power systems and that of the country as a whole.

In the country at the present time power transmissions of a-c at 1150 kV and d-c at 1500 kV are being assimilated. D-c power transmission has a number of advantages; in particular, it improves the stability of conditions for the power systems being united. These advantages should be utilized in the project to create associations of the country's power systems with those of Turkey, Iran and other countries bordering on our nation.

In conclusion, the need for utilizing promising types of energy, solar and geothermal in particular must be noted. Solar energy, for example, can be used in residences being built in the country. As concerns energy from the bowels of the earth, as specialists from the Leningrad Mining Institute recommend, it is advisable to begin exploration and surveying the possibility of building a geothermal power station first of all on the slopes of the Aragats mountain in the Ashtarak region.

The successful solution to the problems enumerated above the others concerning the republic's power engineering will insure an improvement in the level of electrification and the quality and uninterrupted aspect of electric power supply to the electric power consumers. Lenin's electrification plan is also being realized by our republic.

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ELECTRIC POWER

PROGRESS ON CONSTRUCTION OF SAYANO-SHUSHENSK GES REVIEWED

Moscow PRAVDA in Russian 15 Jul 80 p 1

[Article by V. Prokushev, correspondent for PRAVDA: "A Giant Is Gathering Strength"]

[Text] The small room for the structure's staff is situated right on the bank of the Yenisey River. It shudders from the dull impact of the stream valling into the stilling basin. A staff meeting has just ended. No matter how strange, the term "flash flood" was seldom encountered in the brief reports of the production commanders and there was no note of alarm in any of them.

We unwittingly recalled June of last year when 7,000 cubic meters of water per second were passing through the "windows" of the temporary spillways. It flooded the station section and the foundation pit for the third generator unit. Now you wouldn't call the Yenisey still, the water flow is a thousand cubic meters lower than last year, but it could rise again.

"It is a shame that you didn't see a real sight," says K. Kuz'min, chief engineer of the "Krasnoyarskgesstroy" Administration. "As experimental escapage, we opened all eight spillway openings a few days ago and let more than 9,000 cubic meters of water per second pass into the tail race. As you see, the rhythm of building was not disturbed, everyone is working peacefully at his place and the generator units are producing electricity."

This calm has been insured by months of intensive work by numerous Sayono-Shushenskii GES construction subdivisions. Acknowledging the harsh lessons of last spring, the engineers and workers of the Hydraulic Engineering Institutes imeni B.E. Vedeneyev and "Lengidroproyekt" worked out a precise flash-flood program which has been implemented successfully.

In a railroad living car standing near the dam, Vyacheslav Demidenko, leader of a brigade of electrical fitters, unrolls blueprints on a table and relates what has already been done on the next, the fourth generator unit. Deadlines have already been assigned and new, complex matters are troubling the hydraulic engineers. The main limits are to put the fourth unit in operation in October of this year and the 50 by December. Members of the Young Communists League and other young people proposed an initiative movement to move the date for start-up of unit No. 4 from November to 29 October and announced a set of start-up operations as the object of their supervision.

"Our boys were in Leningrad," related A. Artemov, head of the All-union Shock Construction Staff in Sayany; "they met with workers at the "Leningradskiy Metallicheskiy Zavod [Leningrad Metal Plant]" and "Elektrosila" associations. Agreements for early delivery of assemblies and individual items were signed. The coordination council for collaboration of Leningrad enterprises with builders of the Sayano-Shushenskaya GES indorsed the initiative.

How are these agreements being honored today? Everything necessary for installation of the generator has been delivered. The runner for the fourth hydraulic turbogenerator unit was manufactured on time by the "Leningradskiy Metallicheskiy Zavod" production association. However, for a long time the deadlines for its shipment were unclear. Some individual insisted that time could be saved by shipping two runners at once for the fourth and fifth units. There would probably have been a savings in transport costs in this case, but the guarantee of early start-up of the next electric generator, which, by estimates, would have brought about a savings of more than R 1 million, was completely lost. And here again, as has happened more than once, the collaboration agreement played a positive role. The coordination committee made the right decision: the runner is now on board the boat "Sovetskaya Yakutiya" en route to the Karlovskiy site. The Sayanorhushentsy intend to lower it into its crater in July, thereby insuring early start-up of the fourth Young Communists' generator unit.

Moreover the hydraulic engineers are expressing grievances against certain other participants in the agreement, subcontracting suppliers. Last year cables for windlasses were not delivered from Magnitogorski and now they are only promising to deliver it in the second half of the year. Work with the formwork is delayed without cable. Workers from the VNIIG [All-union Scientific Research Institute of Hydraulic Engineering] imeni B.E. Vedeneyev and "Lengidroproyekt" did not give precise answers to a number of important questions. Unfortunately, designers and hydraulic engineers do not always find a common language. For example, the argument was not finished: is it necessary or not to raise a cut-off bulkhead for flash floods? In spite of the design the builders raised it, and, as practice has shown, were correct.

The hydraulic engineers also have their acts of omission. Brigades of fitters from the "Elektrosila" production association should be arriving soon to begin assembly of the main generator assemblies. However, their arrival has not yet been prepared for at the construction site. A large volume of concrete has not been placed on time and the permanent marquee to create the heat duct has not been installed over the generator unit.

Work on the neighboring fifth generator unit is lagging more than a week behind schedule. It is urgently necessary to prepare the under-crane track so that it is possible for the "Elektrosila" fitters to begin assembling the generator equipment.

There are many difficulties, but they are being overcome, and the start-up of each new Sayani hydraulic turbogenerator unit immensely increases Siberia's power capacity.

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ELECTRIC POWER

BRIEFS

CHEGEMSKAYA IRRIGATION SYSTEM--The concrete mass of a hydraulic power system rose up in the path of a turbulent mountain river some 20 kilometers from Nal'chik. This is the pilot structure for the Chegemskaya irrigation and water supply system. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 29, Jul 80 p 2] 9194

NEW TYPE TURBOGENERATOR--Manufacture of a new type of four-pole turbogenerator rated at 1 millkion kW for the Yuzhno-Ukrainskaya AES [Nuclear Power Station] has been completed at the "Elektrosila" association (Leningrad). [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 29, Jul 80 p 3] 9194

ZEYSKAYA GES--The last, the sixth generator unit, rated at 215,000 kW produced industrial power at the Zeyskaya GES. The state commission yesterday signed the act putting it into operation. The unit was received with an "excellent" rating. The GES came up to full power--1,290,000 kW. The resolution of the 25th Congress of the CPSU concerning completion of the hydraulic power system was implemented 5 months early. [Text] [Moscow PRAVDA in Russian 29 Jun 80 p 1] 9194

BURSHTYNSKAYA GRES--L'vov--The Burshtynskaya GRES [State Regional Electric Power Station] can supply a large enterprise with its additional electric power as a result of metrological certification of the automated production control system. The code of rules and regulations for its operation was developed by specialists at the All-union Scientific Research Institute of Metrology of Measurement and Control Systems in L'vov. The importance of such work has already been demonstrated in practice. For example, they determined the most precise parameters for operation of the power units for the Burshtynskaya GRES. The strict observation of these recommendations will reduce fuel consumption and decrease the number of service personnel. [Text] [Kiev PRAVDA UKRAINY in Russian 25 May 80 p 2] 9194

MAJOR RESERVES--Krasnoyarsk (P. Zinkeyev)--The reserves of the Kansko-Achinskiy fuel and power complex (KATEK), stretching out along the Trans-Siberian Railway are great. Here major reserves are being constructed on the basis of which thermal electric power stations such as the Berezovskiye GRES-1 and GRES-2, rated at 6.4 million kW each, will operate. Their first power unit will be put on line in 1983. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 19 Jul 80 p 1] 9194

TVIBERI-LAKHAMULA POWER TRANSMISSION LINE--Tbilisi--It is no longer necessary to use the small diesel electric power stations in Svanetiya and Khevsuretiya; the Tviberi-Lakhamula power transmission line, construction at an elevation of 2,000 meters above sea level, has been placed in operation. Hooking up all inhabited regions of these most alpine areas of Georgia to the united Transcaucasus power system was accomplished 5 July. The increasing needs of agriculture and for construction of enterprises in the alpine and piedmont regions require a significant increase in power supply. All of the new transmission lines lead away from large GES in the mountains. The "Kavkazelektroset'stroy" collective, which is building power transmission lines in all of the Transcaucasus republics, completed the assignment of the Ninth Five-Year Plan ahead of schedule. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 8 Jul 80 p 1] 9194

YUZHNO-UKRAINSKAYA AES--Khar'kov (TASS)--The collective of the plant imeni Kirov marked the competition in honor of the 26th Congress of the CPSU with a significant achievement in the development of nuclear power engineering. The last units for a 1 million kW turbine have been dispatched to the Yuzhno-Ukrainskaya AES [Nuclear Power Station]. The inception of series production of such generator units was made with fulfillment of this order. The new machinery has been created in collaboration with scientists from Moscow, Leningrad, Kiev and Khar'kov. It is twice as powerful as its predecessor. Manufacture of another such turbine for the Kalininskaya AES has started at the plant. [Text] [Moscow IZVESTIYA in Russian 15 Jul 80 p 1] 9194

NUREKSKAYA GES--Nurek (Tadzhikskaya SSR), 30 Jun, (D. Chernysh, free-lance correspondent for PRAVDA)--The generator units of the hydroelectric power plant on the Vakhsha produced the 30-billionth kilowatt-hour of cheap electric power. Its production rates are growing rapidly. Five billion kilowatt-hours have been released to consumers for the first 6 months of this year. Construction of the Nurekskaya GES is approaching completion. All nine of its hydraulic turbogenerator units, rated at 2.7 million kW were put into service a year early. Back-filling the high dam's hearting, into which 8.5 million cubic meters of loam were placed, is now completed. The last trips to the crest of the hand-made mountain were taken by Ivan Shavshin, a construction veteran and driver of the 27-ton "BelAZ" trucks, Viktor Konovalov and others. In all, 53 million cubic meters of fill materials were placed in its mighty body, and it rose to the 293-meter mark. It remains to place the final 1.5 million cubic meters of rock to reach the projected 300-meter height. It is now the most crucial time of the year at the station. Much water is coming down from the mountains. It is necessary to store up the spring floods to the maximum extent possible to reach the projected size of the Nurekskoye Sea--10.5 billion cubic meters. The excess supply is being discharged into the river channel through special diversion tunnels. The creators of the Vakhshskiy hydraulic power system have planned to submit it for permanent operation for the opening of the 26th Congress of the CPSU. [Text] [Moscow PRAVDA in Russian 1 Jul 80 p 1] 9194

GTA-18 GAS TURBINE--Khar'kov (V. Pavlenko)--Designers at the "Khar'kov Turbine Plant imeni Kirov" production association have developed the GTA-18 gas turbine generator unit based on an aviation motor which has proven itself in the sky. The exhaust nozzle which creates a force on the airplane, has been replaced by a power turbine to rotate the shaft of the generator producing the electricity. The installation has been tested in the gas turbine shop of the Khar'kovskaya TETs and can operate on both diesel fuel and natural gas. The unit is now being used to cover the peaks for electric power in the morning and evening. It reaches an output of 18,000 kW in 10 minutes; this could not be reached with the previous generator units. The newly revived aviation motor will yield an annual savings of more than R 8 million. [Text] [Moscow IZVESTIYA in Russian 2 Jul 80 p 6] 9194

ZEYSKAYA GES--Zeya (Amurskaya Oblast)--The last, the sixth generator unit of the Zeyskaya GES has been placed under industrial load a half year ahead of schedule. The Far East's firstling in hydroelectric power engineering reached rated capacity of 290,000 kW. The Zeyskaya GES, the first generator units of which have already produced more than 8 billion kW-hr of electric power became a powerful accelerator for developing the economy of the Far Eastern region. Today industrial centers and agricultural regions, support centers for BAM [Baykal-Amur Mainline] and territorial-production complexes under construction receive its power. Because the flow of the river Zeya is being regulated, an end has been put to flooding, and kolkhozes and sovkhozes are receiving hundreds of thousands of hectares of new lands. A meeting was held in honor of the start-up of the last generator unit at the GES. The station's builders dedicated their achievement to the impending 26th Congress of the KPSU. [Text] [SEL'SKAYA ZHIZN' in Russian 29 Jun 80 p 1] 9194

ACETYLENE GENERATORS--Voronezh (V. innikov)--Considerable attention is being devoted at the Voronezh production association "Avtogenmash" to filling orders from the builders of the "Atommash" plant. Delivery of 85 portable ASP-1,25-6 acetylene generators with a yield of 1.25 cubic meters of gas per hour to their plant has been called for using capital from the third and fourth quarters of this year. The association has already dispatched 35 ahead of schedule and delivery of the remaining 50 such units to fill the yearly plan is anticipated before the end of the second quarter. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 3 Jul 80 p 1] 9194

CHEBOKSARSKAYA GES--Cheboksary (V. Ivanova, TASS correspondent)--Ship traffic on the Volga near the Cheboksarskaya GES which is under construction has become one-way; only a narrow strip of water now separates the left bank of the river from the sandy coffer dam girdling the metal reinforcement for the station's foundation pit. It is less than a half a year until closure of the Volga. The overflow dam and lock chambers are taking on more visible contours. The hydroelectric machinery house has risen high above the river. The most animated place at the construction site is the installation platform, where consolidated assembly of the first turbine units is to begin at the end of summer....But affairs on the installation platform proceed successfully even in the absence of the brigade leader. The fact that everyone has firmly put down roots in the new place helps to maintain them in first place in the competition. They live in well-appointed apartments and their children go to schools and kindergartens. Start-up of the first generator unit will be a gift from the hydroelectric builders to the 26th Congress of the CPSU. When the Cheboksarskaya GES comes up to full power--1.4 million kW--the country will receive cheap energy and ship traffic on the Volga and water supplies for nearby towns will be improved. A railroad line and a super highway which will link the banks of the Volga via the shortest route will pass along the station's dam. [Excerpts] [Moscow GUDOK in Russian 17 Jun 80 p 1] 9194

CSO: 1822

FUELS

ENERGY OF THE EKIBASTUZ FUEL COMPLEX: PARTY OVERVIEW

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 15 Jul 80 p 2

[Article by B. Isayev, First Secretary of the Pavlodar Oblast Committee Communist Party of Kazakhstan: "Energy of Ekibastuz"]

[Text] The Central Committee CPSU and the USSR Council of Ministers in the spring of 1977 issued a decree entitled "On Creation of the Ekibastuz Fuel and Energy Complex and Construction of a Direct Current 1500-KV Ekibastuz-Center Power Line." This decree laid out specific tasks for 1977-1990, including development of large coal mines, major thermal electric power stations, d-c and a-c electric power lines, and facilities in the production base of construction and installation organizations. Provision is also made for the construction of living quarters, a Palace of Culture, sports complex and other facilities for the residents of Ekibastuz.

In short, an enormous volume of work was provided for. Major construction organizations were created in Pavlodarskaya Oblast for carrying out these tasks. In a relatively short time they gathered force. During the past year, for example, this involved a volume of capital investment five times greater than the level of 1976. Facilities for the production of 20 million tons of coal were introduced during the years of the Five-Year Plan. Work was completed on construction of the first power unit of the First Ekibastuz State Regional Electric Power Station, the world's largest coal facility "Bogatyr'," whose planned capacity is 50 million tons per year. It was with great satisfaction and enthusiasm that the workers of the oblast received the greetings of Comrade L. I. Brezhnev, General Secretary of the Central Committee CPSU, Chairman of the Presidium USSR Supreme Soviet, congratulating them on the successful completion of construction of this most important facility of the Ekibastuz fuel and energy complex.

It should be noted that its development, as provided for in the decree of the Party and government, is being carried out on a number of fronts. In addition to the major industrial facilities, housing and cultural center construction is proceeding on a large scale. In the current five-year plan 786,000 square meters of living space, schools, kindergartens, a hospital complex, trade-social center, library and building of the daytime division of the industrial institute have been put into use. A commercial network and public eating facilities are being developed: several department stores and dining halls and cafes have been constructed. A sports complex, which will have a gymnasium and two swimming pools, is being erected, as well as a wide-screen motion picture theater and a Palace of Culture for Power Workers.

As indicated in the decree of the Central Committee CPSU and the USSR Council of Ministers, the industrial facilities are being constructed on the basis of progressive scientific and technical solutions. Speedy "flow production" methods are being employed in erecting the State Regional Electric Power Station and the electric power line. Highly productive equipment is being employed in coal production.

Now when we talk of the energy of the Ekibastuz, we have in mind not only the thickest of coal strata, but also enthusiasm, the creative boldness of thousands of people who are making their way down to these strata, who are renewing the steppe region. At Ekibastuz everyone knows the names of the builders, the workers of glorious deeds N. Prikhod'ko, V. Moiseyev, V. Sezintsev and many others.

The proper choice and disposition of key personnel is of particular importance under the conditions prevailing in the enormous construction undertaking. Energetic, experienced specialists, capable organizers, have been sent to very important posts for Party, soviet and economic work. Two years ago the second construction administration of the "Ekibastuzshakhtostroy" Trust was lagging behind. It was mostly young people who worked here; the directors had not become accustomed to their surroundings. The administration frequently failed to adhere to the times designated for finishing up living quarters for the coal miners. We delegated the capable, high-initiative director G. Kobyl'chenko for leading the administration out of its quandry. He took up the task willingly and made rapid contact with the public organizations. With their assistance he was able to create in the administration one sector and seven Komsomol youth brigades. Experienced construction men with personal drive were named to head these and a real "combat" competition was organized. Now the administration is steadily fulfilling the plan and its name has been posted on the city Honor Roll.

Another example. The Party organization of the "Bogatyr'" mine, one of the key subdivisions of the "Ekibastuzugol'" Combine, is headed by A. Boyko. A thorough-going Communist, he established excellent supervision over activity of the administration. Recently the mine achieved a record index for the diurnal output of coal: the miners produced 140,000 tons of fuel. This was 3,000 tons greater than the planned output.

The problems involved in development of the complex are constantly under the scrutiny of the oblast committee. Recently they were thoroughly discussed at a plenary session. Approval was given to a plan of organizational-political measures. A standing commission headed by the secretary of the oblast committee of the Party is coordinating the activity of all the organizations.

Each month the results are examined at the oblast committee with participation of the directors and secretaries of the Party organizations of the construction projects and the enterprises which are involved. Each month a report is presented by the secretary of the Ekibastuzskiy city committee of the Party and the city executive committee on the course of carrying out of measures for ensuring the finalization of work on living quarters and social-cultural facilities. Such a system for rigorous supervision will assist in increasing personal responsibility of personnel for implementing the decisions of the Party and government.

As is well known, the fate of plans is decided in work teams. Accordingly, the Party oblast committee is concerned with strengthening their Party nucleus, improving the structure of the primary organizations, upgrading their "combat readiness," and promoting the vanguard role of Communists. In comparison with the beginning of the Five-Year Plan, they have become 1,100 men stronger and the total is now 3,630 CPSU members. This is a large force.

Much was done after the 25th Party Congress. However, there are still many unused reserves, as well as different kinds of shortcomings. The principle of "flow production" construction and the established schedule, provided for in the decree of the Central Committee CPSU and the USSR Council of Ministers, for construction of electric power stations have not been adhered to. The reason for this is the poorly organized material-technical supply at the "Ekibastuzenergostroy" Trust, which is headed by E. Filatov. The "Ekibastuzshakhtostroy" Combine is also not fully coping with the tasks assigned it (this combine is headed by A. Pridlyand). At that combine there is not a proper level of organizational-technical leadership and there are frequent departures from work and technological discipline. The CPSU oblast committee is taking measures in order to correct this situation. However, it is not the directors of the local organizations alone who are responsible for the lag.

For example, the USSR Coal Industry Ministry has inadmissibly dragged out the time for carrying out mine planning work and work on auxiliary production facilities whose start-up was planned for 1982-1984. Until now no approval has been given for the technical plans for new productive mines -- "Vostochnyy" and "Severnyy." Completion of planning work on expansion of the plant for repair of mining-transportation equipment, on erection of a central base for the repair and technical servicing of road construction equipment, a large motor pool and a central mechanized base for material and technical supply has been postponed to 1980-1981. No effective measures have been taken for increasing the capabilities of construction organizations. An order of the USSR Coal Industry Minister dated 17 June 1977 "On Measures for Augmenting the Capabilities of the 'Irtyshuglestroy' Trust" has not been implemented.

The cooperative delivery of construction materials and fabricated goods from the operating plants of the Power Ministry is not rhythmic, is not in the proper assortment and is incomplete, especially from Naberezhnyye Chelny, Bratsk and Verkhniy Tagil.

The oblast Party organization, all the workers in the oblast, are faced with extremely serious tasks. This year it is necessary to put into operation three power units for the State Regional Electric Power Station-1 with a total power of 1.5 million kilowatts, develop construction of the "Vostochnyy" coal mine, and finalize a great number of living quarters and social-cultural facilities. These tasks call for a profound creative search and high discipline and responsibility on the part of each worker. They require constant attention from Party, soviet and economic agencies, the maximum mobilization of the strength and energy of the workers, as well as the full use of internal reserves. Only under these conditions will it be possible to carry out the annual plan, to create a good basis for work under the Eleventh Five-Year Plan and thereby worthily greet the 26th Congress CPSU.

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RAISING THE EFFECTIVENESS OF SCIENTIFIC-TECHNICAL PROGRESS IN COAL INDUSTRY

Moscow UGOL' in Russian No 8, Aug 80 pp 20-22

[Article by Cand Tech Sci V. F. Krylov, USSR Ministry of Coal Industry]

[Text] Coal industry possesses a significant scientific potential for solving the problems of scientific-technical progress. The sector has 36 scientific research, planning-design, and planning-technological institutes employing 32,700 persons, of whom more than 120 are doctors and 2,200 are candidates of sciences. More than 130 VUZ's and institutes of the USSR Academy of Sciences and other ministries and departments participate in research for coal industry. Experimental projects are going on at 50 special plants, mines, and enrichment plants. The total outlays on creating, assimilating, and introducing new equipment are 1.2 percent of the commercial production volume.

The sector's largest scientific organization is the Institute of Mining imeni A. A. Skochinskiy, which is conducting research in the basic directions of mining science and coordinating research performed by other institutes of the sector and institutes of other sectors and departments in the area of coal industry mechanization technology. The institute's highly skilled personnel and its huge experimental base permit it to conduct research in a broad range--from fundamental, general theoretical research to create the necessary scientific-technical foundation for subsequent elevation of the technical level of coal industry, to applied studies enjoying direct application in production. The Institute of Mining imeni A. A. Skochinskiy heads a group of technological specialized and basin institutes--the Donets Scientific Research Institute of Coal, the NIIOGR [not further identified], the Perm' Scientific Research Institute of Coal, the Pechora Scientific Research and Planning Institute, the Karaganda Scientific Research Institute of Coal, the Kuznetsk Scientific Research Institute of Coal, and the Shakhty Scientific Research, Planning, and Design Institute of Coal, which are responsible for the technical level of production in the basins assigned to them, or for determining the direction in which equipment and production processes are to develop. Jointly with the Makeyevka Scientific Research Institute of Work Safety in Mining Industry and the Eastern Scientific Research Institute of Work Safety in Mining Industry, the Institute of Mining imeni A. A. Skochinskiy is studying the ways to keep the work safe.

In 1972 a group of planning-design and planning-technological institutes--the State Planning, Design, and Experimental Institute of Coal Machine Building, the Donets State Planning, Design, and Experimental Institute of Coal Machine Building, the Central Scientific Research, Planning, and Design Institute of Underground Machine Building, the Giprouglegormash [not further identified], the Siberian State Planning, Design, and Experimental Institute of Mine Machine Building, the All-Union Scientific Research, Planning, and Technological Institute of Coal Machine Building, and the DonPKTI [not further identified]--was transferred together with coal machine building enterprises to the USSR Ministry of Coal Industry. This made it possible to achieve closer interaction between scientific research and planning-design institutes, and to arrive at integral solutions to the problems of improving production processes and mechanization.

Research aimed at improving production processes and the organization of mine construction is being conducted by the All-Union Scientific Research Institute for the Organization and Mechanization of Mine Construction, the Dongiproorgshakhtstroy [not further identified], and the KuzNIIshakhtostroy [not further identified]; research on enriching, processing, and utilizing coal is being conducted by the IOTT [not further identified], the Institute of Mineral Fuels, the Ukrainian State Planning, Design, and Scientific Research Institute of Coal Enrichment and Briquetting, and the Kuznetsk State Planning, Design, and Scientific Research Institute of Coal Enrichment and Briquetting. Research on economic problems and scientific-technical information in coal industry, which is being conducted by practically all of the sector's institutes, is headed by the TsNIYEIugol' [not further identified], while research aimed at improving control and creating automated control systems is headed by the VNIIUugol' [not further identified]. Working with other institutes in the sector, the VNIIOSugol' [not further identified] is dealing with the problems of averting the harmful influence of production in coal industry upon the surrounding natural environment. In addition to independent institutes, three scientific-production associations have been created in the sector--"Uglemekhanizatsiya", "Respirator", and "Avtomatgormash".

After enterprises and organizations of coal machine building and mine construction were transferred to the USSR Ministry of Coal Industry, the number of scientific research and planning-design institutes increased from 24 to 36. Improvement of control over scientific and design organizations with the goal of making maximum use of their scientific potential and solving the most important problem of coal industry's development has extremely important significance in this connection.

Problems associated with controlling scientific, design, and other organizations participating in the creation, assimilation, and introduction of new equipment must be solved in the following basic directions: improvement of the structure of control in the sector and within its organizations; improvement of the organizational forms of creating, assimilating, and introducing new equipment; territorial distribution of scientific research and planning-design organizations.

Important significance has always been attached to improving control over scientific research in the sector, but these problems became especially acute after all efforts at studying, designing, manufacturing, and using new equipment were concentrated within the sector. Interaction among organizations and enterprises responsible for individual phases of the entire research-production cycle acquired the most important significance. The USSR Ministry of Coal Industry's institutes are subordinated to different administrations and associations that are responsible for their activities and which at the same time act as their clients. This reduces their exactingness in relation to the work of the institutes to a certain extent. Functional administrations and associations are responsible for research planning, the technical administration is responsible for planning the outlays on scientific research and experimental design projects, the financial administration is responsible for paying for finished work, and the accounting and accountability administration is responsible for maintaining records on outlays. Thus development of optimum control systems would doubtlessly promote greater effectiveness in the work of the scientific and design organizations, and better utilization of their scientific potential.

Inasmuch as coal machine building enterprises and organizations are now under the USSR Ministry of Coal Industry, the need has arisen to examine the suitability of uniting organizations and enterprises participating in the creation of particular forms of equipment. In some cases we might create a scientific-production association headed by a scientific research institute, while in others we could establish a large production association having scientific research and planning-design institutes within its composition.

The territorial distribution of scientific research and planning-design organizations evolved in the course of history in accordance with development of coal industry. They are located predominantly in the country's western region. However, because development of coal industry is moving eastward, the need for redistributing the scientific-technical potential has arisen. Presently only 5 of the 36 scientific research and planning-design institutes in the sector are located east of the Urals. Following the example offered by the USSR Academy of Sciences, we must make a bolder effort to increase the scientific-technical potential of coal regions in the country's eastern regions.

Much attention was devoted to the planning of scientific-technical progress at the 25th CPSU Congress and at subsequent plenums of the CPSU Central Committee. Improvement in the premises for the planning of scientific-technical progress was the objective of the 12 July 1979 decree of the CPSU Central Committee and USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality."

There is presently not enough coordination between development of the plans for science and technology and the production plan. The principal indicator of the plan for new equipment--the economic impact enjoyed from its use in production--is not being planned. Hence follows the low responsibility exhibited by enterprises for completing the new equipment plans.

In the new order of planning foreseen by the 12 July 1979 decree of the CPSU Central Committee and the USSR Council of Ministers, the economic impact from utilizing new equipment and technical measures is, to the sector, one of the indicators of the national economic plan. Before we can introduce, into the national economic plan, an indicator of the economic impact from utilizing new equipment, we would have to take steps to prepare the production operations for broad and effective use of this equipment, and we would have to force efforts to introduce new equipment and the necessary material, financial, and labor resources. Requirements on the selection of new equipment to be introduced and on its quality would rise correspondingly.

The effectiveness of scientific-technical progress depends to a great extent on the balance and mutual coordination of long-range and current plans for scientific-technical progress, and their individual sections. The most important component of the overall system of scientific-technical progress is the planning of the development of science and technology--from the level of scientific research to that of industrial utilization of the latter's results.

The 12 July 1979 decree of the CPSU Central Committee and the USSR Council of Ministers indicates a need for improving the grounds for predictions of scientific-technical progress and the economic and social development of the national economy, and for expanding the use of these predictions in planning. Predictions on the most important problems of scientific-technical progress covering 15-20 years have been foreseen in the preplanning stage; these predictions are to be used as a basis for working out the fundamental directions of scientific and technical development over a period of 10 years (broken down into five-year plans). Five-year and annual plans are written on the basis of these basic directions, approved in the established order.

The programed-target method, which involves deep technical-economic analysis of different directions of the sector's activities, must become the most important form of planning of scientific-technical progress. The most important problems associated with writing the target programs include defining the long-range targets and determining the scale of use of the obtained results. Central planning organs are to play a major role in this regard.

Under the existing system for planning scientific research and experimental design projects, practically all scientific and technical projects are combined together into principal research directions. Such excessive centralization makes it difficult to monitor plan fulfillment, and therefore we must select only the most important programs, those that are the most decisive.

One of the reasons for the low effectiveness of scientific-technical progress is incomplete utilization of the results of scientific research and development; the latter is a consequence of the fact that production is not always ready to utilize these results. Consequently the created equipment becomes obsolete. Therefore the target program must also include measures aimed at preparing production for full utilization of scientific-technical results, and the appropriate enterprises and organizations must be made responsible for implementing these measures.

Things are not all that well in coal industry in relation to fundamental and exploratory research. Because of the absence of an adequate scientific-technical foundation, we have not had acceptable proposals for fundamentally new equipment and coal mining processes to replace equipment that has exhausted its possibilities. There are several reasons for this: difficulties in finding new ways to develop science and technology, insufficient supervision on the part of the ministerial administration, and low interest of scientists and designers. It is important to not let this problem slip by during the sector's transition to a khozraschet system for organizing the design, assimilation, and introduction of new equipment; the responsibility of the sector's leading institutes for this work must be raised, since further scientific-technical progress in the sector would be possible only on the basis of long-range research and development.

The target programs, which must be planned centrally, may embrace only the basic directions of scientific-technical progress in the sector. They will be supplemented by the necessary efforts to improve production processes and organization, and to modernize new equipment. We must raise the interest shown in these efforts by production associations serving as clients. This would make it possible to define these projects specifically and intensify control over their completion, inasmuch as their results would be included the plans of economic and social development of the appropriate production associations.

Khozraschet mutual relationships between the developer of new equipment and its uses are closely associated with the planning of scientific-technical progress. The order (business contract) is the principal document used to plan the design, assimilation, and introduction of new equipment. In addition to the goals of the work, it spells out the executors, the work volume, the financing sources, the guaranteed end technical-economic results, the extent to which the results are to be employed, and the dimensions and sources of the economic stimulation funds.

Today neither the client nor the user of new equipment bears real responsibility for its full utilization, as a consequence of which the national economy suffers, since the actual economic impact from using new equipment is in many cases far from the guaranteed impact, as computed in the planning stage, and it very often is independent of the developer.

The existing system for financing the design of new equipment through different sources--the state budget, cost deductions, capital investments, the unified fund for development of science and technology (YeFRNT), and the new equipment assimilation fund--does not permit us to redistribute assets when necessary, which causes disproportions in different stages and directions of scientific-technical progress. We must form a single fund by which to finance all efforts at scientific-technical progress. Considering the features of coal industry, production cost deductions and capital investments must be the main sources with which to form the fund for development of science and technology.

Material encouragement of workers to accelerate the creation of new equipment and increase its effectiveness is one of the ways to raise the effectiveness of scientific-technical progress. Today, assets equal to 6 percent of the wage fund are left at the disposal of the institutes as a means for paying bonuses to workers, irrespective of the effectiveness of their work. The new method of management in science and technology foresees material encouragement to workers for creation, assimilation, and introduction of new equipment depending on the total economic impact enjoyed in the national economy from a concrete completed project. Profit (cost savings) resulting from the use of scientific and technical achievements is the principal source for forming the incentive funds. Favorable conditions have evolved for this in coal industry. All efforts to design, assimilate, and introduce new equipment in the sector are aimed, in the end, at raising the effectiveness of the extraction of coal, the principal product. Therefore it would be suitable to make material encouragement of workers participating in the design, assimilation, and introduction of new equipment dependent upon the end result of the sector's work--profit, or lower cost of extracted coal.

It would also be suitable to pay bonuses depending on the end result to workers of coal machine building enterprises and organizations, who presently receive bonuses through price surcharges. In coal industry, the price of machine building products is in fact an estimate, and therefore the material encouragement given to the creators of new equipment must be dependent upon the end result of its use. This will doubtlessly increase the interest the designers of new equipment show in insuring availability of the necessary spare parts, and it will facilitate organization of the equipment's integral maintenance by manufacturing plants.

Another important problem associated with stimulating scientific-technical progress is current material encouragement of institute workers, especially those participating in the development of new equipment requiring design efforts of lengthy duration. These are, as a rule, major projects having significance to the sector and the national economy as a whole, and they are the foundation of scientific-technical progress.

Coal industry has now developed the basic methodological premises for converting the sector's enterprises and organizations to a khozraschet system for organizing efforts at designing, assimilating, and introducing new equipment, to include: integrated planning of scientific-technical progress,

programed-target planning of the development of new equipment, formation of a single fund for development of science and technology having production cost savings as its source, material encouragement of workers for creating, assimilating, and introducing new equipment on the basis of the end result of the equipment's use in the sector, improvement of the evaluations made of the work of scientists, engineers, and technicians employed by the institutes, and improvement of their current material encouragement. Thus we have laid the foundation for improving control over scientific-technical progress and raising its effectiveness.
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COAL INDUSTRY URGED TO IMPROVE PERFORMANCE FOR MINERS' DAY

Moscow UGOL' in Russian No 8, Aug 80 p 3

[Article: "Meeting Miners' Day Honorably"]

> [Text] "We must apply maximum energy--and this should be emphasized--to successfully complete and surpass the plan for the concluding year of the 10th Five-Year Plan, to put new facilities into operation on time, and to insure the national economy's smooth operation in 1981, the first year of the 11th Five-Year Plan. Naturally, the socialist competition in honor of the congress must play its role here."
>
> L. I. Brezhnev. From a report
> to the June (1980) Plenum of
> the CPSU Central Committee.

Fulfilling the decisions of the 25th CPSU Congress and the November (1979) Plenum of the CPSU Central Committee, the laborers of coal industry are applying all of their effort to successfully reach the targets of the 10th Five-Year Plan.

Initiating a socialist competition to honorably meet the 110th anniversary of V. I. Lenin's birth, 1,452 collectives representing 45 enterprises, 297 sections, and 1,110 teams completed their five-year plans ahead of time. More than 29,500 laborers reported completion of their personal plans.

The first to reach their five-year targets included the collectives of the following mines (mine administrations): "Chervona Zirka", "Udarnik", "Volynskoye", and Torezskoye" of the "Torezantratsit" Association, "Petrovskaya", "Butovka-Donetskaya", and "Kuybyshevskoye" of the "Donetskugol'" Association, "Kommunist" of the "Shakhterskantratsit" Association imeni 60-Letiye Velikoy Oktyabr'skoy Sotsialisticheskoy Revolyutsii, and the following open pits--"Zyryanskiy" of "Yakutugol'" Association and "Berezovskiy" and "Kaa-Khemskiy" of the "Krasnoyarskugol'" Association.

The initiators of the socialist competition are satisfying their pledges successfully--the "Donetskugol'" Production Association, "Kuzbassshakhtostroy" Combine, the Mine imeni Gazeta "SOTSIALISTICHESKIY DONBASS" of the "Donetskugol'" Association, "Zyryanovskaya" Mine of the "Yuzhkuzbassugol'" Association, the "Kharanorskiy" Open Pit of the "Vostsibugol'" Association, the "Sukhodol'skaya" Central Concentration Plant of the "Voroshilovgraduglеobogashcheniye" Association, and the "Pobeda Truda" Machine Building Plant in Artemovo.

Good work is being done by the collectives of the "Torezantratsit", "Voroshilovgradugol'", "Gukovugol'", "Rostovugol'", "Leninskugol'", "Tulaugol'", "Chelyabinskugol'", "Sredazugol'", "Gruzugol'", and "Estonslanets" associations and the "Karagandashakhtostroy" Combine. The advance guard of the socialist competition is represented by millionaire teams headed by M. P. Chikh, V. G. Murzenko, N. N. Skrypnik, and A. Ya. Kolesnikov; these teams are successfully satisfying their adopted pledges. At the same time the collectives of a number of associations, mines, open pits, construction projects, sections, and teams are failing not only their socialist pledges but also the targets set by the state plans. Since the beginning of the year 11 production associations, 33 percent of the mines, and 42 percent of the sections have been unable to complete the coal mining plan. Mine builders have been unable to reach their planned targets. The directors of the lagging enterprises and the trade union committees are not providing the conditions the competitors need for highly productive work, and they are not making full use of the potentials offered by socialist competition for raising the creativity of the laborers and strengthening labor and production discipline.

Miners' Day--the professional holiday of laborers in coal industry--is approaching. Preparing to meet the traditional holiday honorably, many leading collectives are adopting stiffer socialist pledges and assuming a labor watch in honor of this noteworthy date.

Attaching important significance to enlivening the socialist competition for successful completion of the plans and targets of 1980 and of the five-year plan as a whole, the ministry's governing board and the presidium of the trade union central committee have ordered the Ukrainian SSR Ministry of Coal Industry, the directors of the all-union and production associations, combines, trusts, enterprises, and organizations, and the Ukrainian Republic, territorial, mine, construction site, factory, plant, and local trade union committees to:

make an effort at organizing adoption, in all production collectives, of stiffer socialist pledges in honor of Miners' Day, mobilize the competitors to meet and surpass the plan's targets every day, and to attain high production rates at every working face and shortwall, and with every excavator, train, and dump truck;

create, for the competition's participants, the necessary conditions for highly productive labor and successful satisfaction of adopted socialist pledges; direct the efforts of all laborers, engineers, technicians, white collar workers, trade union committee commissions and operational groups, the permanent production conferences, governing boards, and mining scientific organization of labor councils, and the All-Union Society of Inventors and Efficiency Experts at finding and utilizing internal production reserves and raising the effectiveness and quality of the work;

summarize the results of the socialist competition prior to 30 August of this year, announcing the results at solemn meetings and labor holidays dedicated to Miners' Day.

The governing board of the USSR Ministry of Coal Industry and the Presidium of the Central Committee of the Coal Industry Workers' Trade Union are certain that the sector's laborers, who have joined the competition to honorably meet Miners' Day, will successfully satisfy their socialist pledges, raise the effectiveness of production and the quality of their work, and complete the planned targets for 1980 and the 10th Five-Year Plan ahead of schedule. [50-11004]

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PROSPECTS OF MINERAL EXTRACTION ANALYZED

Moscow UGOL' in Russian No 8, Aug 80 p 4-8

[Article by First Deputy Minister of USSR Coal Industry V. D. Nikitin]

[Text] Coal industry in the USSR represents a major integrated operation containing huge associations involved in the extraction and processing of coal and fuel shale, mine construction, coal machine building, and industrial transportation, scientific research, planning, and design organizations, and others.

At the present stage of coal industry's development, mechanized complexes have become the principal and most effective means of reequipment of the coal mines; they are significantly influencing the technical-economic indicators of coal extraction, and work safety. Their introduction has served as a powerful impetus for developing other links of the coal mining process: Effective systems for preparing cutting sections and for developing coal beds have appeared, coal is now transported from the faces to the main loading points by conveyor, and much has been done to improve preparatory mining operations, to increase the capacity of elevators, to improve ventilation, and to organize production and labor.

Fully mechanized faces were responsible for 65.3 percent of the total amount of coal mined from working faces in 1979. Their number increased to 1,250, as compared with 986 in 1975. Full mechanization of mineral extraction is now basically completed in the Moscow Regional, Pechora, and Karaganda basins; its level in these basins is now 98.5, 94.4, and 91.5 percent respectively; in the L'vov-Volyna and Kuznetsk basins it has climbed above 78 and 66.8 percent, and in the Donets Basin it is 54.2 percent. Coal extraction by mechanized complexes increased in the Ninth Five-Year Plan by 2.2 times, shift labor productivity increased by 1.4 times, industrial injuries decreased by 16 percent, and occupational morbidity dropped by 42 percent. All of this was the result of the multifaceted activities of workers of the enterprises, associations, and the USSR Ministry of Coal Industry aimed at improving equipment and processes, organizing production, and raising work safety.

Developing the Stakhanov tradition on a modern technical basis, the leaders of coal industry have taken charge of the socialist competition. The movement of the thousanders, five hundred thousanders, and millionaires, which was vigorously supported by our party's Central Committee, was born. The socialist competition among the participants of this movement has acquired a mass nature.

But concurrently with the significant achievements, shortcomings have also started to manifest themselves in recent years in production organization, the level of which has not always corresponded to the high rates of concentration of coal mining. Certain production processes have not been developed sufficiently. This problem expressed itself mainly in the disproportion between the rate of increase of coal extraction from fully mechanized working faces, and the rate of preparatory operations. Delays in the creation and production of new machines and in mechanizing auxiliary operations, and shortcomings in the schemes and parameters of preparing extraction sections, ventilation, gas removal, transportation, and so on are beginning to have their effects. Some of these shortcomings have transformed into problems hindering further development of full mechanization of coal extraction.

In the last 4 years the sector's pool of mechanized complexes increased by 548 units, but during this time the annual volume of coal extraction increased by only 48 million tons (see table), in which case the total annual volume of underground coal mining decreased by 10 million tons. The slowdown in efforts at full mechanization has resulted in a decrease in the intensity with which obsolete, low-efficiency production processes are being replaced.

Indicators	1975	1975 in Relation to 1971	1979	1979 in Relation to 1976	1976-1979 in Relation to 1971-1975 (Mean Annual Indicators)
Mechanized complexes:					
Available	1258	+524	1806	+548	1.3-time increase
Working	1018	+437	1315	+297	1.2-time decrease
Use, %	80.9	+1.7	72.8	-8.1	2 percent decrease
Level of full mechanization, %	52.5	+27.3	65.3	+12.8	1.7-time decrease
Volume of coal extracted by mechanized complexes, million tons	225	+122	273	+48	2-time decrease

We can see from the table that while the pool of mechanized complexes has increased, the coefficient of their use has dropped. This indicates that we must concentrate our principal attention in the forthcoming period to solving the problems of not only increasing production of mechanized complexes, but also upgrading their quality and improving their use.

A number of mines and associations are failing to meet their targets of mining coal by mechanized complexes. There are a number of reasons for this. First of all the use of mechanized complexes has deteriorated: The load upon the fully mechanized working face has dropped--in the last 4 years it decreased by 132 tons, or by 16 percent, with the greatest decline (186 tons) occurring in mines of the Ukrainian SSR Ministry of Coal Industry, where in 1979 it was 572 tons.

A transition has been achieved in the present five-year plan to a 6-hour coal mining work shift. It was presumed in this case that combine operating time would increase to 31 percent due to improved utilization of working time at the longwalls, reduced idleness, improved job organization, and greater discipline, and thus that the necessary load per complex would be insured. However, this did not happen. Time outlays for the following jobs increased in proportion to total shift time in 1975-1979: by 1.6 percent to repair broken-down mining equipment, by 5 percent to perform the operations of moving conveyors and sectional supports and other basic production operations, and by 0.5 percent for incidental and nonproductive work. And although time outlays for auxiliary, preparatory, and final operations were reduced by 2.1 percent, machine coal mining time decreased from 29.6 to 26.3 percent (Figure 1). Considering, however, that a transition was made in this period to a 6-hour shift and the total extraction time was reduced by 7 percent, the time taken by a combine to extract coal decreased by more than 1 hour, or by 17 percent. A 4 percent increase in the mean feed rate of the combine compensated losses of working time by only 1.5-2 percent. Thus the transition to a 6-hour work shift was not supported by adequate technical and organizational measures.

A worsening of the quantitative use of mechanized complexes was another important reason for the decline in the coal mining rate of fully mechanized faces. In comparison with 1975, their use in the coal mining process decreased from 80.9 to 72.8 percent, which is equivalent to having 140 complexes idle. The situation has deteriorated especially in the "Donbassantratsit", "Makeyevugol'", "Prokop'yevskugol'", and "Tulaugol'" associations, in which 60-67 percent of the available complexes are working, as opposed to 80 percent and more in 1975.

Of course there are a number of sizable difficulties in the work of mechanized complexes. They are being used more and more frequently in less-favorable geological conditions, and the coal mining volume is being increased by development of thin and steep beds. The area of use of mechanized supports is constantly being extended into beds offering conditions not compatible with their technical characteristics (presence of extremely weak, false, and resistant roofing, discontinuous beds, complex hypsometry, and so on).

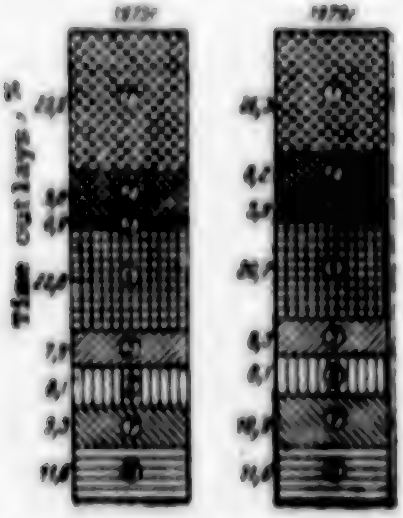

Figure 1. Structure of the Time Outlays of a Mining Shift at a Fully Mechanized Face: 1--coal extraction; 2--coal dressing; 3--movement of supports and the conveyor; 4--auxiliary, preparatory, and concluding operations; 5--nonproductive jobs; 6--official and unofficial breaks; 7--idleness due to machine and mechanism breakdown; 8--idleness due to organizational and other causes.

Absence of a dependable front of stoping operations and tardy preparation of extraction sections are reducing the rate of coal mining at fully mechanized faces. The associations must draw up and comply unfailingly with the schedules for placing working faces into operation, tie them in with the planned mining rate, the plan for preparing production equipment, and the schedule for installing the complexes, and consider the sources and times of delivery of equipment. The schedules must insure that the working face would be ready early, not less than a month prior to the end of work at the previous face. In fact, however, one out of five faces are being prepared late, while for the Ukrainian SSR Ministry of Coal Industry this figure is one out of every three. More than 5 million tons of coal are lost each year because working faces are not being put into operation in time.

An analysis of the work of the mines would show that working faces are being put into operation late because of delays in preparatory mining operations and unsatisfactory organization of installation operations. In a number of cases the quality of the plans for placing extraction sections into operation is poor: Geology is studied and accounted for inadequately, certain production operations are readied without the necessary carefulness, and plan fulfillment is monitored unsatisfactorily. As a result longwalls failing to insure maximum utilization of equipment installed in them are placed into operation. We must insure an optimum ratio between the planned loads per face, the volume of preparatory operations, and the number of operating faces. Every mine must have a dependable cleaning front.

One of the decisive factors that would permit us to raise the load imposed upon the fully mechanized face is the production parameters of the face, which must insure a possibility for maximum utilization of the complex of equipment being used, with a consideration for the highest possible concentration of jobs. Long longwalls (up to 300 meters) are being prepared at a number of mines of the Ukrainian SSR Ministry of Coal Industry. This results in a decrease in the unit volume of preparatory operations and a 10-15 percent increase in the load per face, but the efficiency of using the mining equipment decreases by almost 1.5 times owing to a decrease in load per meter of face length. A significant increase in the length of longwalls must be reinforced by efforts to concentrate jobs and to raise the load per face by 1.5-2 times, as is being done by the five hundred thousander teams and millionaire teams. On the other hand the longwalls of some associations ("Leninskugol'") have a below-standard length, which dramatically increases the laboriousness of the work and reduces the technical-economic indicators.

We can insure dependable operation of highly productive faces only by increasing the cross section of workings contiguous with the longwalls to 12 m^2, something that the USSR Ministry of Coal Industry is perpetually bringing to the attention of mine directors. Such a cross section would permit entry of the necessary quantity of air, placement of the required transport and other equipment, mechanization of final operations, and maintenance of the integrity of workings without additional movement of supports. However, adequate attention is not being devoted to these factors at the mine, and as a rule the cross sections of contiguous workings does not exceed 7-8 m^2, as a result of which only 16 percent of the faces are worked without the need for digging recesses.

The effectiveness of the concluding operations at a working face, upon which we spend up to 20-30 percent of the working time, depends on the elevation and configuration of contiguous workings: in each concrete case they must correspond to the structural layout and technical parameters of the machines employed. Thus the load per longwall increased by 2-2.5 times with the use of a KMT complex instead of a KM-87E complex in the complex mining and geological conditions offered by the "Abashevskaya" Mine. However, because the conveyor gallery was not undermined, further growth in the productivity of this equipment was restrained. In other cases where the thickness of the extracted bed is up to 3.5-4 meters, the height of the galleries does not exceed 2-2.5 meters, which also complicates performance of the final operations.

One of the factors that would permit us to improve the use of mechanized complexes is improvement of assembly-disassembly and repair jobs. The average times required to assemble and disassemble all mechanized complexes has decreased insignificantly; as before, they exceed the standards by a factor of two, being 25 and 26 days respectively. Exceeding the standards for assembly-disassembly operations in the sector as a whole is equivalent to the idleness of about 100 complexes or the loss of 2 million tons of coal in the course of a year.

Eighteen specialized administrations have been created in the associations in order to centralize and specialize the work of assembling, disassembling, and adjusting the mechanized complexes; these administrations are performing a significant volume of jobs of adequate quality. By centralizing the organization of assembly-disassembly, repair, and adjustment jobs, we significantly raise the coefficient of use of the mechanized complexes. This work must be improved and developed further.

Correct organization of the preparations of longwalls and of equipment assembly and disassembly will insure successful coal mining in the mines. Special measures must be foreseen when drawing up the schedules of the mines for initiating work at and abandoning faces, and the plans for longwall preparation. They must spell out the deadlines, the executors, and those responsible for all jobs, they must reveal the critical paths for reaching the final results, and they should make mention of back-up variants for doing some of the most complex jobs.

Unsatisfactory organization of the labor of repairmen at the longwalls is also having an influence upon the mechanized complex use indicators. Not more than 60 percent of the time of the repairmen is being utilized. A limited number of mines are using the order-report system of technical maintenance, and the company maintenance system is developing insufficiently; the level of production organization at the repair enterprises is still low. Thus the time of overhaul of extraction combines exceeds the standards by 1.5 times, and the operating life of equipment following repairs is 10-15 percent below the set standard. The reliability of mechanized supports, combines, and conveyors has increased insignificantly, as a result of which the outlays on technical maintenance and current repairs of 1GSH-68, 2K-52M, and 1K-101 combines exceed the initial cost of the equipment on an annual average.

If we are to complete the coal mining plans and improve technical-economic indicators, we will first of all have to organize highly productive work at the fully mechanized faces, and the fullest possible utilization of the complexes. The plans for preparing and mining the extraction sections by mechanized complexes must be written in strict compliance with the "Flow Sheets," "The Fundamental Premises for Using Mechanized Complexes in the Working Faces of Coal Mines," and "Loading Standards for Working Faces Based on Mining and Geological Conditions and Mechanized Extraction Methods." The plans must include flow charts and labor organization charts, they must spell out the number of workers required and the methods for weakening the roofing, they should make presence of repair shifts and organization of technical maintenance and repair of equipment on the basis of order-reports with a consideration for material stimulation mandatory, and so on.

The application of mechanized complexes is being extended more and more to sections containing beds with complex characteristics and surrounding rock. Mechanized complexes with improved technical parameters--the OKP-70, KM-130, and KM-87P1--would be the best in such conditions. In other cases it would be suitable to have mine repair plants and coal basin institutes make certain improvements in the machines of the complex, in application to the concrete conditions and in coordination with the manufacturing plants; it would also be suitable to make prudent use of methods for artificial weakening or strengthening of roofing rock.

Were we to improve the equipment, prepare the mining front on schedule and well, raise the level of technical maintenance of the mining equipment, reduce the time outlays on production and organizational processes, and use effective methods to work the beds and surrounding rock, we would produce a possibility for making better use of the equipment and raising the load imposed upon the fully mechanized face, even if the mining and geological conditions worsen.

Reequipment of coal industry must be accelerated by creating and assimilating complexes of equipment making use of improved mechanized support intended for complex mining and geological conditions. Experimental industrial operation of new complexes at mines of the Kuznetsk Basin, designed to satisfy today's technical needs, showed that the load upon a working face may be increased by a factor of 1.5-2 while simultaneously raising work safety and the dependability of extraction equipment operating in complex mining and geological conditions. Producing improved, dependable machines having a longer life means satisfying the needs of the mines more fully at lower absolute equipment production volumes, simplifying the equipment's operation, reducing the laboriousness of maintenance in complex underground conditions, and making sure that machines would need fewer repairs during operation.

Further development of coal mining by mechanized complexes would be unimaginable without reequipment of coal machine building. Certain advances were made in designing fully mechanized resources of a high technical level in the 10th Five-Year Plan. A new generation of equipment complexes intended for complex mining and geological conditions and beds 0.7-4.2 meters thick was developed: KM-103--for thin beds, KMT (Figure 2) and 1UKP (Figure 3)--for beds of average thickness, PUKP and KMT-130 (Figure 4)--for beds of average thickness and thick beds, and AK-3 and others--for steep beds. It is now important to accelerate the work of preparing and organizing series production and assimilating these complexes.

The time has come to create equipment complexes for coal extraction in which modular units and parts are maximally unified on the basis of progressive concepts. This is important work, work which will produce a great impact in relation to both production and operation of mechanized complexes; it must be performed by scientific research and design organizations and plants in the shortest time possible, such that practical results could be enjoyed within the next few years.

The scientific and planning organizations must concentrate their efforts at developing and introducing new, effective coal mining processes applicable to complex mining and geological conditions, especially ones to be used with extremely thin and steep beds, and at creating improved systems for developing

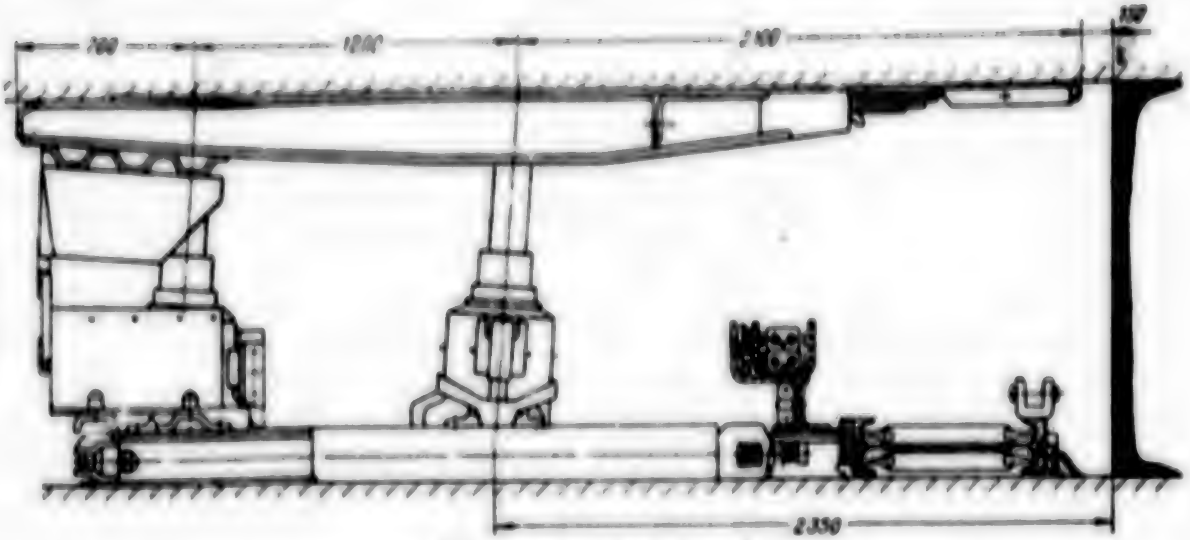

Figure 2. KMT Complex

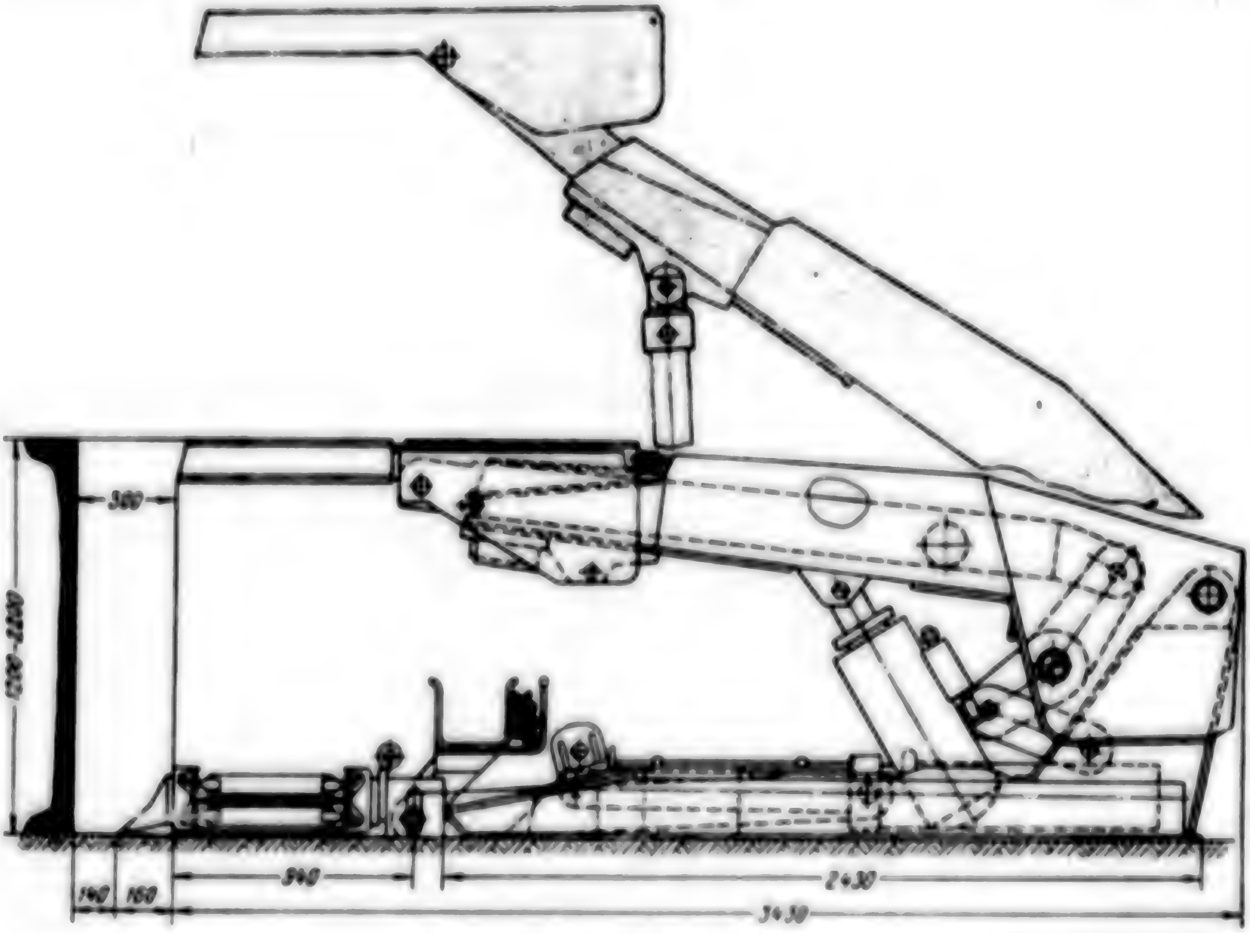

Figure 3. 1UKP Complex

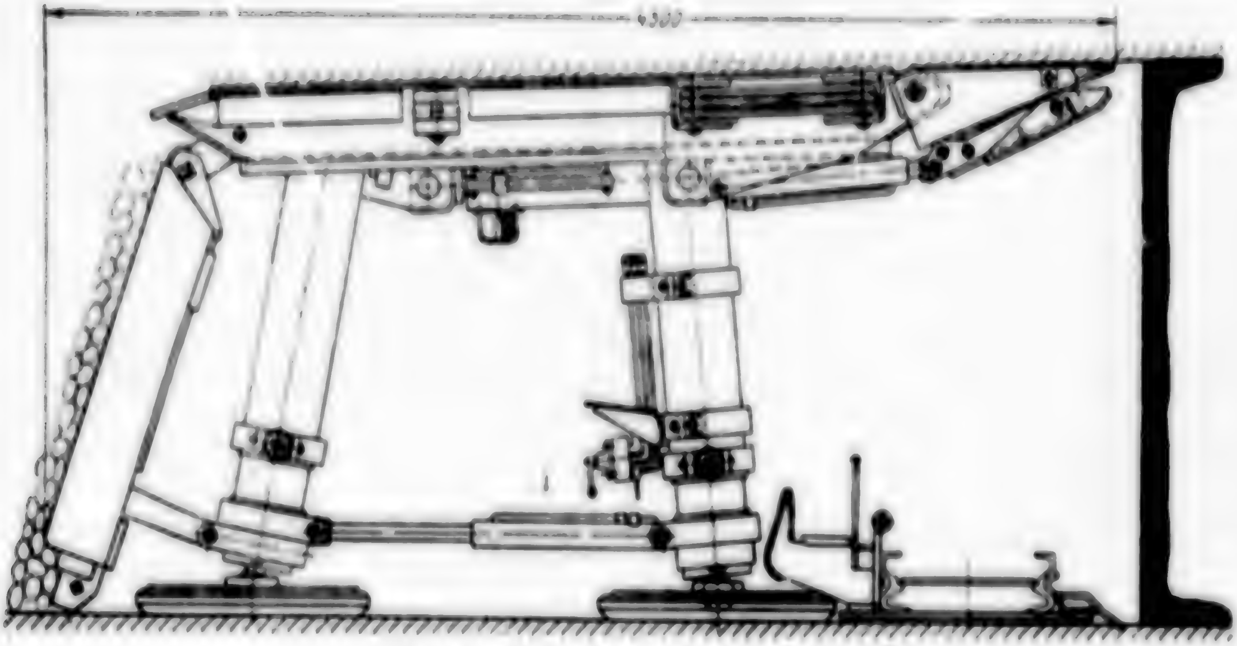

Figure 4. KMT-130 Complex

coal deposits, new resources for full mechanization of coal extraction and mine working, automated complexes that can mine coal without the constant presence of people at the faces, and effective methods for breaking down hard coal and rock, and controlling spontaneous blow-outs.

Special significance is being acquired by improvements of tests on new equipment, taking the form of reducing the time of such tests and revealing, to the fullest extent, the design and operating qualities of the machines, as well as their reliability. This would require broader development of test stand organization with the goal of creating testing conditions most closely approximating those of industrial operation at the test stands.

We must improve the organization and methods of industrial tests: selecting and preparing the test sections, training and hiring the testing personnel, and developing improved systems of responsibility and stimulation of the developing organizations and the enterprises at which the new equipment undergoes testing.

In addition to creating complexes of a fundamentally new technical level, in a short time and with minimum outlays, we must also modernize the extraction equipment used by the best mining teams to achieve the highest coal mining results.

Creation of equipment complexes making use of high-resistance mechanized supports makes them more expensive, and therefore we must insure high dependability of all machines within the complex (extraction, transport, and so on), such that we could increase their productivity and effectiveness.

According to the estimates these requirements could be satisfied by complexes of equipment operating in complex mining and geological conditions with a daily productivity of 1,000 tons in beds up to 1 meter thick, and 2,000-3,000 tons in thicker beds. The life of these complexes prior to overhaul must be not less than 1-2 million tons.

The role of mechanized complexes as the basic and most effective resource of coal industry's reequipment is growing immeasurably. If we are to raise the effectiveness with which complexes of equipment making use of mechanized supports with different parameters are used in different mining and geological conditions, it would be very important to develop scientifically grounded methods for evaluating the characteristics of surrounding rock in fully mechanized working faces, methods that can be conveniently applied to practical situations, and to determine the range of effective use of mechanized supports having different parameters. Methods must be developed for arriving at particular parameters and selecting the type of mechanized supports depending on the class of roofing, the thickness of the bed, and other factors.

In addition we must improve information provided on the work of fully mechanized faces, and we must create a "Equipment Utilization and Repair" subsystem for sector, association, and mine automated control systems and TP [not further identified] automated control systems, ones that would handle the planning, technical maintenance, and repair of mining equipment, maintain records on the availability and movement of equipment and spare parts, and so on.

Domestic coal industry was the pioneer in creation and broad assimilation of resources for full mechanization of coal mining. The existing experience and the powerful scientific-technical potential assure us that the problems facing the sector, associated with reequipping the coal mines and raising the effectiveness of the work of coal industry, can be realistically solved. [50-11004]

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FUELS

REQUIREMENTS FOR WELL DRILLING DETAILED

Kiev PRAVDA UKRAINY in Russian 24 May 80 p 2

[Article by I. Fedorchenko, academician-secretary of the Physical-Technical Problems in Materials Technology Division of the Academy of Sciences of the Ukrainian SSR and academician of the Academy of Sciences of the Ukrainian SSR: "What's Used to Drill an Oil Well, The Science-Industry Complex"]

> [Text] Speaking at the November (1979) plenum of the CPSU Central Committee, Comrade L. I. Brezhnev pointed out that in accomplishing the urgent tasks facing our national economy, especially now on the threshold of the next five-year plan, the party is counting on effective assistance from our scientists--the Academy of Sciences of the USSR, the republic and sectorial academies and of all scientific research institutes. The improvement and development of the country's fuel-energy balance is one of these most important tasks.

The Soviet Union may without exaggeration be called a land of derricks. They stride across the Carpathians and the Poles'ye, the Transcaucasus and the Povolzh'ye, the sands of Central Asia and the vast expanses of Siberia. The petroleum-, gas- and coal-exploration front is continuously being extended. How can we help our drillers open up our abundant resource deposits more quickly? The answer is clear: we need to raise the technological level of our drilling equipment and move more boldly in introducing the latest scientific advances into practical operations.

Complaints and protests are being made about the quality of drill bits. Bits are not withstanding today's drilling rates and great depth; literally beyond their "teeth" is the hardness of the rock barrier through which they must penetrate on their way to the mineral resources.

Together with the Drogobych bit plant and UkGIPRONIIneft' [Ukrainian State Scientific Research and Planning Institute of the Petroleum Industry], a number of institutes of the Academy of Sciences of the UkSSR have accomplished much in the way of increasing bit durability, reliability and service life. Footage per Drogobych-brand bit has on the average been doubled over the past five years. This success reflects the development efforts of the Institute of Superhard Materials of the AN UkSSR. The scientists' work has led to the appearance of a new type of composition, rock-breaking tool materials, which have been given the name "tvesaly." One of them is the widely known superhard material "slavutich."

The technology involved in the mass production of articles from "slavutich" has been mastered; more than 120 type sizes of highly efficient deep-well drilling tools have been developed. In a number of instances, the average footage per "slavutich" bit exceeds by 70 times that for a series-produced rock-cutting bit.

Synthetic diamonds have also been successfully used in drilling operations. Over 30 type sizes of crown bits, reamers, drill bits and special-purpose tools have been brought out.

Take the BSS crown bit. It is entirely set with synthetic diamonds. Six type sizes of these bits have already been successfully tested and recommended by the Ministry of Geology of the USSR for series production. But their production in Minstankoprom [Ministry of the Machine Tool and Tool-Building Industry] enterprises is still behind schedule. There is no plan governing cooperation between scientists and machine builders and specifying volumes and target dates for putting this promising article into production.

Drillers have meanwhile set researchers new tasks. They need bits made of superhard composition materials capable of sharply increased rates of drilling through hard and abrasive rock at depths below 500 meters.

Neither is there no little to be accomplished in the way of improving bit design. Being used in bits in the meantime are ball and roller bearings (rolling supports), which quickly fail when abrasive material gets into their operating area. Bit abrasion resistance may be increased by going over to a rotary drilling method (in place of the turbine method) and by the use in bits of hermetically sealed sliding supports instead of rolling supports.

The Institute of Problems in Materials Technology of the AN UkSSR and its OKTB [technological design bureau] have developed an antifriction material for bearings capable of heavy-duty operation with great loads. Several bit designs have been developed together with the VNIIBT [All-Union Scientific Research Institute of Drilling Technology] and the Drogobych bit plant. An area has been set up for their production.

It would appear that the obvious advantages of the new bits have made them objects of keen interest on the part of the ministries concerned and has prompted them to set up and organize for their production. The introduction of these innovations into actual operation, however, is going very slowly.

Bits of advanced design undergo prolonged testing. And indeed the test procedure itself has now become obsolete and is burdened with unnecessary regulations. Minnefteprom [Ministry of the Petroleum Industry] clearly should review this procedure with a view to reducing the periods and the amount of testing required. Several innovations have already sufficiently convincingly demonstrated their advantages.

For the purpose of accelerating the introduction of improved designs, it would be to advantage with Minnefteprom USSR to establish within the near future the dimensions, types and quantities of bits for rotary drilling with reference to the years to 1990 and together with the Ukrainian Academy of Sciences to draw up a scientific and technical program for the development, testing and introduction of bits with sliding supports made of composition antifriction materials.

It would also be of benefit to reorganize the facility at the Drogobych plant and provide it with the necessary production equipment. This advanced technology can then be passed on to other, allied enterprises. The increase in the volume of work to be done in the institutes of the AN UkSSR this will entail will naturally require additional resources from Minnefteprom. Minkhimmash [Ministry of Chemical and Petroleum Machine Building] will also have to play a role in meeting our needs.

The bit is the drill operator's primary tool. But that is not the sole concern of the conqueror of the earth's interior. No few other means of labor require improvement. It is here that science makes its contribution. The Institute of Arc Welding imeni Ye. O. Paton of the AN UkSSR, for example, has developed and introduced a band relit [transliterated]--an added material for facing bit assemblies, drill couplings, centering guides, drill-pump bushing and rod calibrators and other parts. The academy institute and UkrGIPRONIIneft' have collaborating in setting up a laboratory. A method has also been developed for ultrasonic inspection of fused sliding drill-bit supports and turbodrill shafts and housings. The Institute of Physical Mechanics of the AN UkSSR has proposed new high-strength steels for bit legs and other parts. Designs have been developed for shock absorbers used above the bit, which reduce vibration, increase the rate of penetration and extend the service life of bottom machinery, drill pipes and other equipment.

In addition to the institutes referred to above, a number of other organizations are also working to improve bit materials and designs, as well as the technology involved in their production. Successes there have been. But the basic problem arising in connection with the effort to raise the technological level of our drilling equipment has yet to be solved--with respect to drilling-tool efficiency, penetration rate and durability we have not yet achieved on a broad scale the level of the most advanced models available in the world. We are behind in the area of materials for crushing and breaking components, sliding supports, bit legs and drill pipe centers and couplings. It is necessary to develop new technologies for welding and local strengthening of load-bearing parts and for application in methods of compressing and strengthening equipment working components.

More could be accomplished in the way of improving drilling processes if we were not experiencing such an acute shortage of equipment employed in nondestructive methods of testing drilling pipes and their coupling components. Industrial workers would in turn work more productively if they were fully provided with high-effiency, high-precision metal-working equipment.

Neither have solutions been found for problems associated with a purely organizational plan. It is now necessary to develop an integrated scientific-technical program governing drilling-equipment development. As things are now, this work is for the most part being conducted in a disjointed, uncoordinated manner.

All necessary conditions have now been satisfied for the development of a program combining the efforts of academic and industry instutes, enterprises and ministries. It looks as though the Ukrainian Academy of Sciences, which has a strong base in the institutes of the Division of Physical-Technical Problems in Materials Technology, will have to take the lead in the work on this program.

We should now also be taking steps to accelerate the introduction of procedures which have proven highly efficient in operational tests. We must have reliable borehole performance from rock-breaking and crushing components based on artificial analyses, sliding supports made of new composition materials, above-bit shock absorbers and other equipment. This will constitute a significant scientific contribution to the solution of one the urgent tasks facing our national economy at the threshold of the new five-year plan.

8963
CSO: 1822

LACK OF ELECTRODRILLING EQUIPMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 8 Mar 80 p 2

[Article by I. Payvin: "Quiet Battle. Why is Electrodrilling Being Inadequately Introduced in Petroleum Regions"]

[Text] In actuality, there has been no other such a sad case in the introduction of new equipment as is true of the electric drill. For a long time it had a weak current conductor. The latter often snapped. From time to time it was necessary to raise and lower cable sections and this required a lot of time. There were also other design shortcomings.

Some imperfections elicited a surprisingly stiff hostility toward this apparatus on the part of workers in the Petroleum Industry Ministry. They were firmly committed to turbodrilling. For the sake of correctness we note that the turbodrill, first employed in our country, immediately demonstrated its merits and was adopted without reservation. The opinion of the leadership at the Petroleum Industry Ministry was unanimous; time should not be wasted in the mastery of another, questionable machine. But life has introduced its corrections: the turbodrill in deep boreholes (especially if they must be drilled under complicated conditions) does not give the proper effect. It would seem that in such a situation it was necessary to turn precisely to the electric drill.

However, the workers of the Petroleum Industry Ministry, despite the obvious indications, stood their ground with great tenacity, in every way possible putting obstacles on the path to extensive introduction of the electric drill.

In the documents with which we have become familiar it is easy to trace this resistance. The leadership of the Ministry more than once has called upon the USSR Gosplan to reduce the already small volume of electric drilling and even cut off the production of face motors.

And nevertheless the electric drill survived! The people who were working with it in actuality confirmed its high qualities. Master Timirbulat Vil'danov, Hero of Socialist Labor, whose brigade is drilling boreholes not far from Ufa, states:

"I have been working for more than 20 years with the electric drill. After the new current conductor made its appearance the machine became without equal. The automation of drilling processes, which drillers had long been awaiting, can be done only on the basis of the electric drill. They complete almost every borehole 10 days earlier than with a turbodrill and at the same time there is a saving of up to 40 bits."

In their letter, to which we will return, 16 workers of the "Turkmenneft'" Combine report that exploratory boreholes with a depth greater than 4,000 meters are drilled with an electric drill 68 days more rapidly than by the rotary method.

But enough of examples; many of them could be given. Field specialists have long been convinced that the electric drill, in combination with a telemetric system, which makes it possible to drive a borehole in any direction and monitor the orientation of the shaft, is an indispensable machine. It operates with any muds.

But it is possible to give the go-ahead with one hand and pull in the reins with the other. It is inconceivable, but for the time being that is specifically what is happening. The volume of electric drilling is not increasing. Six years ago plans called for the drilling of 350,000 m of boreholes. But during the past year only 295,000 m were drilled, of which more than half was in Bashkiria.

I met with V. Ivanov, head of the Section on Face Motors, Bits and Tools of the Petroleum Industry Ministry. He is one of those who is responsible for the use of these machines.

Viktor Prokof'yevich had nothing against the electric drill, but during the course of the conversation frequently emphasized that it was desirable to use it under complex geological conditions, and also in the drilling of boreholes at sea.

There are complex conditions and there are complex conditions. Here is one of the examples of how electrodrilling is used in such places. At the "Potentsial" Combine, which was assigned the responsibility for creating and producing nontraditional electrical equipment, exerting an active influence on technical progress, including the face motor with such an unhappy fate, the General Director of the Combine, A. Ostrovskiy, showed me what he called unique documents. We will not cite them in full -- they are lengthy. The essence of the first four of these documents is that the specialists of the "Azneft'" Combine and scientists heatedly praised the electric drill, which had been used successfully in penetrating through thousands of difficult meters in the earth's crust in the Zagly-Zeyva deposit. Here you can read about the increase in effectiveness of operation of the bits and the high velocities and the guarantee of drilling of slanting boreholes in a stipulated direction and preservation of national forests.

Signatures. Seals. Everything in its place.

And the last of these "delights," reflected in the fifth document, was the following: the electric drill has no place at Zagly-Zeyva.

At the "Potentsial" Combine they have a simple explanation for such a strange turn-around: the drilling administration of the Petroleum Industry Ministry, learning about the successes of this face motor in still another region, rushed to arms to save the reputation of the turbine method, which there did not give the anticipated results, and forbade use of the electric drill.

But it is not the Petroleum Industry Ministry alone which is not opening the way for this face motor. There are also other obstacles on its path. In the words of V. Ivanov, a considerable part of the responsibility rests with the Electrotechnical Industry Ministry.

"Before increasing the volumes of drilling," says Viktor Prokof'yevich, "one has to be concerned about the conditions. Already seven years ago it was written in a protocol of the All-Union Conference on Electric Drilling: 'The Electrotechnical Industry Ministry, instead of workshops for the repair of face motors, must create enterprises for the production of electric drills and at the same time take on itself the delivery of these machines for drilling crews.' However for the time being nothing has been done. In addition, the electric drill is a complex machine and requires high skills on the part of servicing personnel. And who will teach the people?"

As we see, the petroleum workers have their grievances against the Electrotechnical Industry Ministry, but also at the "Potentsial" Combine, which was established recently and which is included in this ministry, there are also many complaints.

The chief engineer for electrodrilling equipment, V. Popov, also boldly raises questions and at the same time gives answers to them:

"Are the volumes of drilling not increasing? And how will these volumes increase if the Petroleum Industry Ministry does not increase its call for the fabrication of electric drills? Even in the coming five-year plan it is proposed that a hundred machines be produced annually. Drilling in the sea? O.K. Let the petroleum workers call for the production of face motors loud and clear. Train personnel? This is the first time I have heard about this. But if it is necessary, we will organize courses. With respect to the construction of enterprises for the production of electric drills, the situation is more complex. If such capabilities are created, I think that the petroleum men will go for an increase in the volumes of drilling. But this work has not yet been initiated."

Now everything is clear: each person hoes his own row. There is a quiet battle between the two ministries, they send letters to one another, they exchange reproaches. So things are at a standstill.

And now for a moment let's talk about the letter of the workers of the "Turkmenneft'" Combine. It was addressed to the Minister of the Electrotechnical Industry, A. Antonov. It speaks out clearly about how in the course of recent years the performance of electrodrilling equipment has not been increasing. Moreover, the interrepair period for operation of face motors has been decreased by 20 hours. The cable sections, reducer elements and other parts have serious faults. The arriving motors and other equipment, even prior to delivery to the drillers, must be taken apart and individual units must be bored.

However, it is noted in the letter, the enterprises can put out an excellent product. For example, electric drills fabricated without deviation from the drawings and technical specifications operate at the face up to 300 hours without repair. A control consignment of cable sections, fabricated in rigorous conformity to the specifications, operated seven times longer than ordinary standard-produced sections.

There are many such complaints. Because the Electrotechnical Industry Ministry does not worry about the quality of drilling equipment. And this results in a discrediting of the face motor. But there is more to it than just quality. Whereas prior to 1978 the ministry carried out its agreed-upon obligations for the delivery of electric drills to the petroleum workers, during the past year the plan for their production has been "chopped." Less than half of the 80 intended machines have been produced.

In short, the Petroleum Industry Ministry and the Electrotechnical Industry Ministry, pointing out the failures of one another, are striving to exploit such shortcomings in their own interests. At these ministries they have ceased to evaluate the developing situation critically with respect to electric drilling in the petroleum regions of the country. Red tape has really brought an important matter to a halt.

5303
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FUELS

LACK OF EQUIPMENT AT SAATLINSK SUPERDEEP HOLE

Baku VYSHKA in Russian 5 Mar 80 p 2

[Article by O. Nechipurenko: "Before the Second Stage of Drilling"]

[Text] At the Saatlinsk superdeep borehole, targeted for a depth of 15 km, the bit is approaching the 6-km depth. From the very beginning of drilling of the unique borehole dozens of scientific research and planning organizations in Moscow, Leningrad, Baku and many other cities in the country have been carrying out multisided geological-geophysical investigations using the rock samples collected in drilling and are carefully seeking answers to the questions of interest to science.

Next on the agenda is the program for a new stage in drilling of the borehole. It calls for a depth of 7,500 m, when the drill hypothetically will enter into the granite layer -- the earth's "solid mantle." The principal task of the drillers and geologists is making timely preparations for this and ensuring implementation of the planned measures.

At an all-union coordinating conference held the other day at the Azerbaydzhan Scientific Research and Production Petroleum Institute there was a careful analysis of the results of the first drilling stage and the problems which will be solved in its second stage.

It was noted at the conference that a factor of great importance is the further improvement of drilling methods and equipment. In particular, at the drill rig it is extremely important to make more extensive use of low-speed turbodrills which will make it possible to obtain considerably more rock samples from the borehole. At the moment there are still not enough samples and this can exert an influence on the rates and quality of research. It is necessary to speed up the creation of new types of heat-resistant drilling muds, without which a successful attack on the superdepths would be unthinkable.

Another, equally important matter is the use of special apparatus by means of which it would be possible to carry out investigations directly in the borehole. Some types of such apparatus have not yet been developed and those which have already been produced by industry have not yet been received for use by the Saatlinsk petroleum exploration expedition.

The valuable equipment which has already been received by Saatlinsk specialists also has not been put to use for the time being. It was stated in the reports and communications of the conferees that many investigations of rocks are being held up and are not giving sufficiently reliable results due to the lack of the necessary instruments, such as for spectral analysis. However, a spectrograph for the superprecise evaluation of minerals, received during the last year of the expedition, still remains idle. It is felt that for the time being it is not needed at the drill rig.

It should be noted that in essence there is no place to install or place the new, modern equipment which is needed for the second stage in drilling of the borehole. At the present time at Saatly there is still no laboratory building or core storage building which is adequate for housing the kilometers of rock samples taken from the borehole. There are also no buildings in which one could store geophysical apparatus. All this, to be sure, cannot but exert an influence, stated the conferees, on the rates with which the planned program will be carried out.

Finally, it is necessary, as quickly as possible, to eliminate those irritating flaws which today hinder the carrying out of investigations of the deep layers with the maximum effect. For example, the determination of one of the principal characteristics of the penetrated rocks -- their absolute age -- under the coordinated plan was delegated to the Geology Institute Azerbadzhan Academy of Sciences. But this work was not done on schedule and it was stated that the reason for the failure was an interruption in the supply of liquid nitrogen, which, as is well known, is produced in small quantity in the republic.

The situation with geophysical investigations of the borehole for the time being is not entirely favorable. Until now the "Azneftegeofizika" Trust has not assigned a permanent logging party to the expedition and surface seismic work is not being done. The trust would be happy to carry out this work and the station needed for this purpose is in the hands of the Azerbaydzhan Division of the All-Union Scientific Research Institute of Geophysics: for a long time these two related organizations have not been able to come to agreement with one another and proceed to joint research, as provided for in the program.

In the course of the coordination conference it became obvious that together with indisputable successes on the difficult path to the earth's deep layers there are still more than a few obstacles. Most of them are entirely superable. The drillers and scientists have all they need in order to mark the final year of the Tenth Five-Year Plan with new attainments in the drilling of the superdeep borehole and in study of the processes of formation and distribution of minerals in the earth's deep layers.

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AGRICULTURAL BASE FOR THE KANSK-ACHINSK FUEL-POWER COMPLEX

Moscow SEL'SKAYA ZHIZN' in Russian 3 Feb 80 p 2

[Article by N. Tatarchuk, Chairman of the Executive Committee of the Krasnoyarskiy Kray Council of People's Deputies: "There Where KATEK Will be Situated"]

[Text] It has only been during the last decade that the Sayanskiy territorial-production complex, whose power "heart" is the world's largest Sayano-Shushenskaya Hydroelectric Power Station, as well as the Minusinsk complex of electrotechnical enterprises, the Krasnoyarsk and Noril'sk industrial regions, Achinsk, Abakan and other industrial complexes, have been formed and created in the lands adjacent to the Yenisey.

But amidst these giants a special place, because of its scale, is occupied by the now-formed Kansk-Achinsk fuel and power complex (KATEK -- Kansko-Achinskiy Toplivno-Energeticheskiy Kompleks). Its raw material base consists of enormous reserves of coal extending over the territory over an area of 60,000 square kilometers along the Transsiberian Railroad for a distance of almost 800 kilometers.

The program for KATEK development provides for the construction of coal mines with an output of 50-60 million tons annually. Unique thermoelectric power stations will be established here. It goes without saying that there will inevitably be a vigorous growth of population in the cities and in the worker settlements. Already in the coming decade the population in the KATEK zone will increase by several times.

All this, naturally, will necessitate an increase in the production of all types of agricultural production, especially such products which are difficult to transport as vegetables, potatoes, milk and eggs. Accordingly, measures have been developed for the further development of agricultural production in the KATEK zone. These measures will provide for the satisfaction of the needs of the growing population in the zone with respect to meat and milk products, potatoes and vegetables by means of an increase in their local production.

Farms in Sharypovskiy, Nazarovskiy and Rybinskiy Rayons are designated for this purpose, being in the KATEK zone of influence: a total of 16 sovkhoz and 2 kolkhoz enterprises. Now they have 427,000 hectares of agricultural lands of which 290,000 are cultivated lands. Production is increasing. However, its existing level by no means will ensure the needs of the growing population. Even in the next few years the present goals will be surpassed with respect to the production of meat, milk and eggs by a factor of 1.4-1.5, potatoes and vegetables -- by a factor of 2.7-4.

We see the route to achieving of the planned goals in a further specialization of the farms, strengthening of their material and technical base, construction of a whole series of livestock buildings and other facilities, and a considerable increase in the level of multisided mechanization. Seventeen farms are being specialized for the production of milk. They will not only increase the number of cows, but also augment their productivity by means of an improvement in the structure of the herd and an improvement in the quality of the cattle. At the sovkhoz enterprises specializing in milk production plans for the next few years call for increasing the percentage of milk cows in the herd to 50-55% and the density of cows per hundred hectares of agricultural lands will be increased to 10 head instead of the 6 at the present time.

Three sovkhoz enterprises will be specialized in beef production: "Orakskiy" in Sharypovskiy Rayon, "Krutoyarskiy" in Nazarovskiy Rayon and "Cheremshanskiy" in Rybinskiy Rayon. They will account for up to 40% of the beef production. Three sovkhoz enterprises will be engaged in pork production.

Thought has been given to the creation of a solid fodder base, without which the plans cannot be carried out. Here there is no way to get by without intervention of land improvement specialists. They will construct irrigation systems for an area of 1,430 hectares; drainage work will be carried out over an area of 3,700 hectares; there will be radical improvement of 3,800 hectares of hayfields and pastures.

Specialization is the principal means for increasing the harvesting of garden production and potatoes. Mechanized units on six farms in the zone will be engaged in the cultivation of the "second grain" [potatoes]. In Sharypovskiy Rayon the areas sown in potatoes will be increased during the five-year plan by a factor of 2.2 and gross production will attain 11,200 tons instead of 4,000 tons, as now. In this same rayon, at the "Belozerskiy" sovkhoz, we have planned concentration of the cultivation of vegetables.

It would be erroneous not to take into account the enormous difficulties which must be overcome in order to attain the planned goals: after all, a big stride forward must be taken. Here there is no way to get by without a considerable strengthening of the material and technical base of farms in the KATEK zone.

As indicated by computations, even now the farms in the zone must be sent 45,000 tons of mineral fertilizers. But the quantities allocated to the kray do not permit these requirements to be met even by half. We believe that the RSFSR Agriculture Ministry should carefully consider the problem of allocating the kray additional quantities of mineral fertilizers specifically for the farms in the KATEK zone.

And the existing production base of the sovkhoz and kolkhoz enterprises in the zone is far from necessary levels. Many cattle are sheltered in old and makeshift buildings, which makes it difficult to apply modern means of mechanization and the introduction of progressive technologies. At a number of sovkhoz enterprises the absence of storage facilities for mineral fertilizers is a problem and they need mechanical repair workshops. At the "Beloozerskiy" sovkhoz, even this year, provision is made for constructing a grain-drying complex with a handling capacity of 10 tons per hour, a complex for cleaning grass seed, a potato storage facility for 1,500 tons, storage for mineral fertilizers, cow barns for 800 head, silo and hay storage structures for 1,600 tons and two feed preparation facilities. At the "Orakskiy" sovkhoz there must be a grain-drying complex, storage for mineral fertilizers, silo trenches for 10,000 tons, a feeding complex for 3,000 head of milk cattle, cow barns for 400 head and other facilities.

There is much to be done at the "Sharypovskiy" and "Ivanovskiy" sovkhoz enterprises -- grain-drying complex, potato storage facilities, cow barns, silo structures, feeding area for sheep, and a number of other useful structures.

The implementation of measures for the development of agriculture in the KATEK zone requires considerable capital investment and a marked increase in the volumes of construction. The rural construction organizations now operative here are simply unable to cope with such volumes of work. Mechanized column No 485 of the "Krasnoyarskkraysel'stroy" Combine, which is carrying out construction work in the settlements of Sharypovskiy Rayon, is now capable of carrying out work in a volume of 1.2 million rubles annually, but it must reach a volume of 4-4.5 million rubles annually. There is urgent need for solving the problem of increasing the capabilities of contracting organizations. We feel that the RSFSR Agricultural Construction Ministry should manifest a due level of interest in these operations.

KATEK is a complex of major coal and power enterprises at which considerable work forces will be employed. But KATEK is also cities and worker settlements where the families of power workers and coal miners will live. And we feel that the corresponding industrial ministries, especially the Ministries of the Coal Industry, Electric Power and Electrification should show concern about the development of a food base here. In our opinion, their proper participation in implementing the program for developing agriculture in the KATEK zone should be substantial. In particular, they must take upon themselves work on the demolition, moving and construction of new populated places, production structures, living quarters and other facilities. They can do much for the development of vegetable raising and dairying. In particular, we feel that the USSR Power and Electrification Ministry and the USSR Coal Industry Ministry through their personnel and equipment must build in Sharypovskiy Rayon a greenhouse combine covering six hectares with its subsequent expansion to 12 hectares, as well as two livestock complexes for the production of milk (1,200 head each).

With respect to rural construction organizations, their contribution must increase with respect to both quantity and quality. It cannot be allowed that in the settlements in the KATEK zone the residential and cultural-social conditions be poorer than in the cities and worker settlements; this would inevitably result in a leakage of people from the sphere of agricultural production. The planned program for the restructuring of sovkhoz and kolkhoz settlements should be carried out in full volume. Much experience has been accumulated in the multisided building-up of settlements in the kray. The sovkhoz technical school imeni V. I. Lenin and N. K. Krupskaya in Shushenskiy Rayon, the "Krasnyy Khleborob" kolkhoz in Ilanskiy Rayon and many other such facilities are giving a new appearance to the countryside. According to the most recent projects plans call for constructing such settlements in the KATEK zone as Nikol'skoye, Dubinino and Kadat.

We are sure that in solving a problem of vital importance for KATEK -- the creation here of a highly productive agrarian zone -- the ministries and departments will inevitably be involved. This national undertaking can be solved only through joint efforts.

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FUELS

VALERIAN MIKHAYLOVICH BERMAN CELEBRATES HIS 60TH BIRTHDAY

Moscow UGOL' in Russian No 8, Aug 80 p 59

[Text] On 31 July 1980 Professor Doctor of Technical Sciences Valerian Mikhaylovich Berman, Director of the Mining Machinery Automatic Regulation and Hydraulic Drive Laboratory of the Institute of Mining imeni A. A. Skochinskiy, celebrated his 60th birthday.

After finishing 3 years at the Moscow Mining Institute, in 1941 V. M. Berman volunteered for the peoples' militia in Moscow, his wartime career took him from private to commander of a rifle battalion, he was wounded three times, and he was awarded two combat orders.

After demobilization in 1945, V. M. Berman returned to his studies at the Moscow Mining Institute; following his graduation he worked as a section mechanic and chief mechanic at mining enterprises.

V. M. Berman substantiated the suitability and practical possibility of using hydraulic transmissions in mining transport machines, and he developed the theory of hydraulic clutches.

Research by V. M. Berman on hydraulic drives resulted in the creation of a number of high-torque hydraulic motors for mining machinery, and in the proposal and substantiation of a theory of hydraulically controlled machinery accounting for the operating modes of this machinery, interaction of the working organ and the face, and the mechanical characteristics of the material being worked.

Valerian Mikhaylovich participates extensively in public scientific work. He is a member of the scientific and scientific-technical councils of the Institute of Mining imeni A. A. Skochinskiy and the scientific council of the Moscow Highway Institute. V. M. Berman has prepared 18 candidates of sciences. He has authored 123 scientific works and inventions.

For his services during the war and for his scientific achievements, V. M. Berman has been awarded the orders of the Red Star, Patriotic War 2d Degree, "Badge of Honor", and Red Labor Banner, six medals, the "Miner's Glory" Honorary Badge, 2d Degree, and gold, silver, and bronze medals of the Exhibition of the Achievements of the USSR National Economy.

The editor's office and the editorial board of the journal UGOL' congratulate Valerian Mikhaylovich Berman on his jubilee and wish him further creative successes, good health, and much personal happiness.
[50-11004]

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ERRATUM: Please substitute these pages for same, which appeared in JPRS 76242, 18 August 1980, No. 27 of this series pages 29-34. The pages were out of order.

FUELS

EKIBASTUZ FUEL-ENERGY COMPLEX

Moscow IZVESTIYA in Russian 20 Jun 80 p 2

[Interview with B. Isayev, first secretary of Pavlodarskaya Oblast Party Committee, by Yu. Grin'ko, P. Kulagin and G. Shipit'ko, IZVESTIYA special correspondents, Pavlodar: "Kazakhstan: Experience, Reserves--The Second Mountain of Ekibastuz"]

> [Text] The analysis of the situation on the principal projects scheduled for completion this year, performed recently by the CPSU Central Committee and personally by Comrade L. I. Brezhnev, obligates paying special attention to accelerating the activation of projects assuring a reliable satisfaction of the nation's demand for fuel and power resources. A major task for 1980 and the subsequent years is the acceleration of the construction of the Ekibastuz Fuel and Power Complex, which is of tremendous importance to the national economy.
>
> What is the progress of the construction of this largest project in Kazakhstan? How is the program for its economic and social development being fulfilled. These questions particularly agitate at present the party, Soviet, and administrative agencies in the region. These questions are now the subject of an interview between our special correspondents and First Secretary of the Pavlodarskaya Oblast Party Committee, Deputy to the USSR Supreme Soviet B. Isayev.

Question: Boris Vasil'yevich, the creation and development of any major industrial complex upsets the normal routine of life in the region affected. What changes in the socio-economic life of the oblast have taken place since the initiation of the Pavlodar-Ekibastuz Territorial-Production Complex?

Answer: It is hardly possible to enumerate the new spots that have appeared in the last 10 years on the economic map of the Pavlodar region near the Irtysh River. I'll only list the projects representing, as the saying goes, the backbone of industry: The ferroalloys plant and the state regional electric power plant in Yermak--the largest in the eastern USSR; the petroleum refinery and the tractor and aluminum plants in Pavlodar; the Omsk-Pavlodar petroleum pipeline; the world's largest coal mine, Bogatyr'; and the first of a series of thermal power stations in Ekibastuz--a 500 MW turbine-boiler unit which already generates power that is being used to further develop the complex.... Nearly all types of modern transport--aviation, rail, waterway, automobile, pipeline--have converged at our "crossroads."

The Pavlodar-Ekibastuz Territorial-Production Complex is based on cheap coal and energy. But the path toward these resources is not so cheap. The construction of the Ekibastuz complex has been estimated at nearly 8 billion rubles. The state invests these funds in the development of large Trans-Ural coal deposits because it is these that provide an ironclad guarantee of the success of the subsequent programs for the economic development of our nation as well as of, to one extent or another, the countries of the socialist camp. Hence it is nothing surprising that in recent years so much impetus has been given to developing the region.

Question: That is, an economic potential assuring the development of the complex at a definite pace has been established. Is this potential always rationally and adequately exploited?

Answer: The establishment of such large socio-economic subdivisions as the Pavlodar-Ekibastuz Territorial-Production Complex largely hinges on the initial period of development of the region, on the rational allocation of manpower and material resources, and on the development of the entire social-communal structure. Unfortunately, certain of these principles have been violated during the first years of establishment of the complex. As a result, the pace of construction of the unique state regional electric power plants has been disrupted, for which the oblast party organization and certain ministries have been sharply criticized at the November (1979) Plenum of the CPSU Central Committee.

Recently both builders and coal miners have received substantial material and manpower support. Important steps have been taken to improve the administration of capital construction. The Ekibastuzenergostroy, Kazakhstan's largest power construction trust, has been set up. The structure of the Ekibastuzshakhtostroy Mine Construction Combine has been made more flexible. Last year was a turning point in reaching a smooth rhythm of operation of the intricate machinery of the complex. In that one year the utilization of capital outlays was fivefold as high as in 1976--the first year of construction of the series of state regional electric power stations. For the first time coal extraction reached 59 million tons, of which 85 percent by means of heavy-duty rotary excavators. Improved equipment also is being supplied for open-strip operations. That is, the socio-economic background of the complex has markedly improved.

However, many obstacles still bar the path toward the complete exploitation of the potential. Of course, problems should not be exaggerated, but they should not be whitewashed either. I'll list some. So far the construction of the coal part of the complex lags markedly behind schedule. The situation is as follows: in accordance with the target in 1985 the extraction of Ekibastuz coal should reach approximately 105-115 million tons a year. To this end, plans exist to build within the next few years the Vostochnyy Mine with an annual extraction of 20 million tons of coal and to modernize the Severnyy Mine so as to increase its extraction capacity to 35 million tons. The whole of these measures will cost half a billion rubles. But the current capacity of the Ekibastuzshahtostroy Mine Construction Combine is such that it can handle barely one-third of that construction. It is desirable to draw the attention of the Gosplan, the Gossnab, and the USSR Ministry of Coal Industry to the fact that the construction base of that combine is growing at an impermissibly slow pace: It has not utilized even one-tenth of the funds allotted for its expansion.

There also exists an urgent need for accelerating the technological reequipping of extraction facilities. Mine equipment is worn out and the existing plant for the repair of mining and transport equipment copes only with one-half of its orders. Moreover, that plant lacks the facilities for the general overhaul of complex rotary and transport equipment. The Ministry of Coal Industry should have started modernizing the repair base as far back as in 1978 and completed the job within three years. Following its modernization, the plant's capacity would have increased fourfold. But so far nothing has been done about it. We also are concerned about the lack of a power facility repair base for the Ekibastuz state regional electric power plants which, after all, are unique equipment. In this connection, I support the idea of the Siberians regarding the organization of a special autonomous cost-effective repair service.

Question: Last January at the meeting of the party and administrative activists of Ekibastuz it was stated that "relay-race" labor competition is absent in the construction of the series of state regional electric power plants. What is impeding the introduction of this progressive mode of interrelation of participants in the construction of that grandiose project?

Answer: A relay-race competition follows two paths: interregional and within the complex. During the first stage of construction of that series of plants both these paths proved to be rocky. This may be due to various causes: first, the project itself is unique--several power generating units are being built at the same time. The project is new, there is no previous experience, and its implementation has to be often revised. Secondly, the interests of some 20 ministries collide in the construction of this project, and it takes time to coordinate them. Lastly, so far there is no comprehensive approach to the development of the Pavlodar-Ekibastuz Territorial-Production Complex. This results in a marked lag in the formation of auxiliary interbranch types of production. Under these conditions it is fairly difficult to maintain a stable rhythm of "relay-race" competition.

Of course, in recent years builders have become more experienced and better organized. At present "relay-race" contests are being established on housing and civic construction sites. Installers, finishing workers, electricians, and plumbers are entering into the appropriate agreements.

It is necessary to expedite the solution of principal problems under the jurisdiction of ministries and departments. The unique nature, large scale, complexity, and tight construction schedule of the fuel and power complex require establishing a state coordinating commission or council which could include responsible representatives of ministries, departments, planning agencies, the USSR State Committee for Science and Technology, and the party and Soviet organizations of the republic and oblast.

Each year the importance of the Ekibastuz rail hub is increasing. Three-fourths of all freight in Pavlodarskaya Oblast passes across that hub. Its complete renovation has started. To this end, more than 200 million rubles has been allotted. It has become a complex matter to manage this increasingly intricate mechanism. Hence it appears worthwhile to set up a separate Ekibastuz division of the Virgin Lands Railroad.

At present the system of requisitions for and allocations of material and equipment resources is too ponderous. As it operates now, the paperwork has to be handled successively by the Pavlodar Supply and Marketing Administration, the Virgin Lands Supply Administration, and the republic and Union gossnabs. The administration of material and technical supplies in the region would markedly improve if a territorial subdivision of the Gossnab were to be set up in Pavlodar along with a general and highly mechanized depot. All this will facilitate the interaction of territorial and branch-of-industry interests, the composition of balanced plans for the production and distribution of principal types of products, for capital construction and for the development of the socio-communal infrastructure.

Question: And yet, Boris Vasil'yevich, the most important and perhaps most difficult factor in building the territorial-production complex is the supply of manpower resources to the region, along with the assurance of adequate up-to-date social and living conditions for the population. How is this problem being solved?

Answer: From whatever side the developmental prospects of the region's productive forces are considered, the human factor is always encountered. Hence unflagging attention must be paid to interpersonal relations on the construction site and in life, as well as to the spiritual aspirations and material concerns of the people. In this context, the first stage of construction in Ekibastuz has been highly instructive to us.

It cannot be said that the problem of living conditions here has been completely resolved. IZVESTIYA has reported on this matter before. The developmental scale of the complex requires doubling and tripling the effort to establish the [socio-communal] infrastructure. The army of builders has grown to 18,000 people. The volume of construction and installation operations has grown fivefold. To assure a balanced level of coal extraction in the next few years the Ekibastuzugol' Coal Association needs an additional 6,000 miners, roughly speaking. The entire republic is helping this project.

Of course, the years of creation also are the years of ardent disputation, of errors, of creative searches. It is necessary to understand the psychology of certain administrators whose interests are narrowly confined to production problems. There also have been and continue attempt to "split up" Ekibastuz into separately administered housing projects. The power-plant people are especially excited about this matter. There is even a saying on construction sites: a housing project next to each smokestack. But the city soviet has resolutely supported the idea of a single modern well-built city for all--for the miners, for the builders, and for the power-plant people. The party oblast committee and the oblast executive committee also support this idea.

Purely tactical mistakes also have been made. The USSR Ministry of Energy decided to supply housing components for Ekibastuz from Bratsk and Naberezhnyye Chelny. This proved to be a mistaken decision. A local housing construction industry should have been established from the very beginning. This is finally being done now, after a costly delay. The Yermak and Ekibastuz reinforced concrete products plants are being urgently modernized, and the capacities of the Pavlodar Housing Construction Combine are being expanded.

And yet, despite the great difficulties during the first stage of construction of the fuel and power complex, in 10 years Ekibastuz will become the pearl of Northern Kazakhstan. It will become a city of shady lanes and squares, water fountains, theatres, places of culture, and sports stadiums.

The obstacles on this path are numerous, and they cannot be overcome all at once. We are carefully analyzing the fruits of our work, identifying the bottlenecks, exploring more efficient ways and means. We strive for common sense and order in everything.

Question: In regions of intense industrial development a major problem is the supply of foodstuffs to the population. Could you tell us about the extent of the program for developing the oblast's agriculture, especially near the industrial centers?

Answer: The Pavlodar region near the Irtysh River is cnancy farming country. The average annual precipitation is less than 300 millimeters. In view of this scientists proposed most reliable techniques such as the strip system of crop rotation, and cultivation without upturning the soil. On the whole, the 10th Five-Year Plan period proceeds satisfactorily for the oblast's agriculture. Livestock feeds are available. The capacities for the production of meat, milk, eggs, vegetables, and potatoes are increasing. We are betting on the creation of large specialized agricultural complexes.

There exist vast irrigable tracts. Land irrigation produces assured harvests of vegetables, potatoes, and fodder.... Experts have calculated that in the next 15-20 years the area of irrigated lands in the oblast can be augmented to 340,000 hectares. This of course entails substantial expenditures of Irtysh water. As a result, the question of examining the water balance sheet of the Irtysh has already become ripe: the examination must be done with allowance for the water demand of agriculture, industry, and other branches of the Pavlodar-Ekibastuz Territorial-Production Complex.

I would consider this question more broadly. The growing industrial complex in a combination with a vast agricultural zone needs its own scientific research center which could deal with the problems of both irrigated farming and the expansion of plantings of groat crops (for which the premises are good) as well as selection work. The basis for setting up such a research center could become the local branch of the All-Union Scientific Research Institute of Grain, Pulse, and Groat Crops as well as the oblast experimental station.

The research center could also provide substantial assistance to the development of the agrarian shops of industrial enterprises. Incidentally, in our cities this work is developing at a satisfactory pace.

The establishment of the Pavlodar-Ekibastuz Territorial-Production Complex represents not a special drive but a purposeful state program. Such construction projects should be placed under a special watch as regards both the system of the allocation of material and manpower resources and the observance of contractual and project-estimate discipline, and also the establishment of a developed infrastructure. This is precisely the goal toward which we are inspired by the decisions of the 25th CPSU Congress and the November (1979) CPSU Central Committee Plenum, as well as by the resolutions of the party and government concerning the development of territorial-production complexes.

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